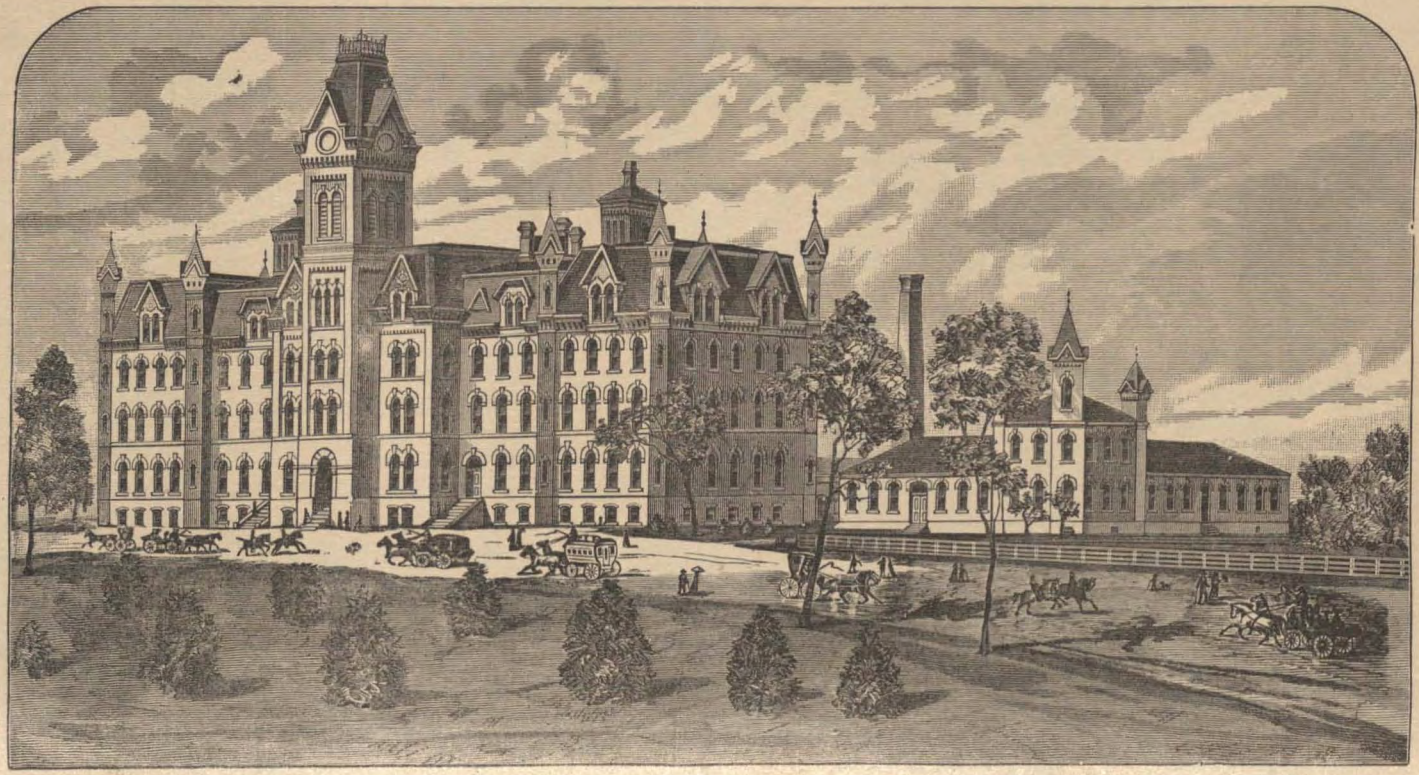

OHIO STATE UNIVERSITY.

TWELFTH ANNUAL REPORT

OF THE

BOARD OF TRUSTEES

OF THE

OHIO STATE UNIVERSITY,

TO THE

GOVERNOR OF THE STATE OF OHIO,

FOR THE YEAR 1882.

COLUMBUS:
G. J. BRAND & CO., STATE PRINTERS.
1883.

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OHIO STATE UNIVERSITY.

1882-1883.

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COLUMBUS, OHIO, *November* 15, 1882.

To His Excellency, Governor Charles Foster:

SIR: I have the honor to transmit herewith the Twelfth Annual Report of the Board of Trustees of the Ohio State University, showing the condition and progress of the University.

Very respectfully,

Your obedient servant,

ALBERT ALLEN,

Secretary of the Board.

REPORT OF TRUSTEES.

Governor Charles Foster:

SIR: The Board of Trustees herewith submit the twelfth annual report of the Ohio State University.

Nine years ago, the Ohio State University was opened for the reception of students. Estimated by the number of matriculates then enrolled as compared with that of this term, an increase in public appreciation, of more then ten fold is noted. Then only 27 students were in attendance at the beginning of the term, while now 338 are being instructed in the different departments of the University. Nor is this gratifying increase in numbers the sole measure of advantages resulting to the State. A broader scope of instruction with better facilities, is giving back to her a superior class of more thoroughly educated and better trained minds; and it is not without reason that the institution, in all that pertains to effective work in the truest and best forms of mental culture, claims a rank and position among the best of American colleges.

No event during the year has so greatly stimulated the energies of all to whom the interests of the University are intrusted, as the action of the last General Assembly in placing the means within the power of the Board to meet the necessity for additional buildings; by which the increasing want of room is not only supplied, but the invaluable collections and outfits belonging to the various departments are better secured against loss by fire and other causes. The appropriation of $20,000.00 made by the General Assembly on the 31st of March last, for a Chemical Laboratory building was followed by such necessary action on the part of the Board as would secure the completion of the building at as early a date as possible. At their meeting on the 18th of April following, the selection of a site was made, and J. T. Harris & Co., architects, were engaged to perfect the plans already in the main agreed upon. The approval of the plans, specifications and estimates, and other legal steps required by section 783 and 784 of Revised Statutes having been taken, bids for the work were opened and considered on the 8th of June. The contract was awarded to Messrs. Clark and Fahey for the sum of $18,750. In the construction of the building special effort has been made to adapt it, in all its parts, to the uses for which it is designed. Architectural effect

could play but a secondary part in the construction, as the appropriation would only allow the erection of a plain and substantial, but not unsightly building, 42 feet 2 inches wide by 160 feet 2 inches long, not including the central wing, 40 by 40 feet. The basement runs the entire length of the building, and is 8 feet high in the clear. The stone foundation walls are principally 24 inches in thickness, with heavy stone footings at the bottom. These walls extend four feet above the ground, and the elevation of the structure from the ground line to the top of the cornice is 37 feet, and to the comb of the roof, 51 feet. The first story is 14 feet high, and contains 15 rooms. The second is 15 feet 3 inches high, and contains 16 rooms, all of which are enclosed by brick walls, there being but few stud partitions in the building. The outer walls are of brick, 17 inches thick, and the roof being covered with slate and the cornice being of iron, the edifice is protected from danger by fire from other buildings. All necessary gas, poison, and other ventilating appliances used in Laboratory work in the department of Chemistry and Mining and Metallurgy have been introduced in the construction. The transfer of the apparatus and equipment belonging to the two schools, from the main building, will be made as soon as circumstances will admit. No part of such transfer involving the cost of plumbing work and heating arrangments, was embraced in the contract, the entire appropriation being hardly sufficient for the simple erection of the building of adequate dimensions. This expense will have to be provided for, as the Board will not be able to meet amount from funds at their disposal.

Under an act of the Legislature, passed April 17, 1882, section 8433 of the Revised Statutes, relating to the Virginia Military Lands, was amended to read as follows: "The proceeds of the sales of such lands, or so much thereof as may be necessary (after the payment out of the same of all the necessary expenses of survey and sale) remaining uncertified into the treasury of said state, may be used by said Trustees in building and maintaining upon the lands of the University, suitable houses adapted to use, as family residences, for the use of members of the Faculty of said University, for which use a fair and reasonable rent shall be paid to said University. Said buildings shall be erected under the provisions of Title Six of the Revised Statutes of Ohio, and the said Trustees shall annually report to the Governor a detailed statement of receipts and disbursements in the execution of the trusts under the provisions of this act."

The advantages of having the professors located in the immediate vicinity of the University, and the securing of this end without loss to

the University, of any portion of its annual income, were alluded to in the last report. Subsequent consideration of the matter strengthened those convictions, and the Board decided to avail themselves of the liberty given them in the act recited above. Contracts were accordingly entered into for the erection of three residences; one of brick, with 10 rooms, at a cost of $5,799.92, another of brick, of 8 rooms, at a cost of $4,524. and the third, a frame of 10 rooms, at a cost of $4,800.00, aggregating in all $15,123.92. As shown by the last report of the Treasurer, there was remaining of this fund "uncertified into the State Treasury," $8,433.25. Since that time, the amount received from cash sales and interest notes given in purchase of these lands less the expense incident thereto, is $6,929.76; so that the sum now available for this purpose aggregates $15,363.01.* These structures have been placed fronting the line of the new entrance from High Street to the campus, and in capacity have been accommodated to the varying wants of the families of the professors wishing to occupy them. This difference in size and design is also more pleasing and attractive to the eye than any effect that could have been produced by uniformity in construction. The policy of further increasing the number of these buildings as rapidly as the collections of money will admit, will doubtless be adhered to until the small fund remaining shall have been exhausted.

Wishing to learn as much as possible concerning the financial condition and patronage of other similar institutions, a circular was prepared and addressed to the proper authorities in thirty-seven States of the Union, known to have established colleges upon the basis of the Congressional Land Grant of 1862. These circulars embraced inquiries concerning the following matters:

1st. *When* did your *institution* go into operation?.....

2d. What was the *largest number of students* in attendance during the last collegiate year?.....

3d. What is the present amount of the *Endowment Fund, as derived from the sale of Land Scrip?* .....

4th. What is the present amount of *Endowment* from any *other source?*.....

5th. What is the *Annual Income* from both the above sources?.....

6th. How much money, in the aggregate, has the *Legislature of your State appropriated,* to your Institution, since its *establishment,* for the following purposes, viz.:

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* See Treasurer's report for Va. Military Land Fund.

(*a*) For buildings.....
(*b*) For equipment and supplies.....
(*c*) For general support and maintenance.....
(*d*) For Library .....
(*e*) For Farm and appurtenances.....

7th. How much land is owned by the Institution?.....

Only 26 States have responded to these inquiries, and but few of them as fully and definitely as was desired. In order, however, that your Excellency and the Legislature of the State may be informed, at least approximately, concerning a matter identical in purpose and of equal and *common* interest to all the states, a tabulated statement, containing the main facts has been prepared and is herewith submited:

States.	Name of Institution.	Organized.	No. of Students.		Endowment from Land Scrip.	Endowment from other sources.	Present Annual Income.	State appropriations.					No. acres in farm.
			Males.	Females.				For buildings.	For equipment.	For general support.	For library.	For farm.	
Alabama	Agr. and Mech. Col.	1872	125	*a*	$253,500 00	*	$20,280 00	*	*	*	*	*	100
Arkansas	Industrial University												
California	University of Cal.	1869	176	51	470,066 38	$870,000 00	100,000 00	($455,000	)	$1,149,544 00	$35,800	*	200
Colorado	Agricultural College.	1878	32	30	Unsold	*	*b*20,000 00	5,000	*	*	*	*	240
Connecticut	Sheffield Sci. School.	*	190	*a*	135,000 00	*	56,944 45	*	*	*	*	*	*
Delaware	Delaware College												
Florida	State Agricultural Col.	*d*	*	*	135,000 00	*	*	*	*	*	*	*	*
Georgia	State College of Agr. and Mech. Arts.	1872	159	*	242,202 17	*c*128,000 00	35,653 00	50,000	$15,000	*	*	*	70
Illinois	Industrial University	1868	276	76	319,000 00	*	19,000 00	182,700	56,950	59,400 00	20,000	$58,500	623
Indiana	Agricultural College.	1874	162	76	340,000 00	*	17,000 00	60,000	19,000	54,500 00	5,000	8,000	189
Iowa	State Agr. College	1869	210	70	585,000 00	45,000 00	44,000 00	400,000	*	*	*	*b*1,500	850
Kansas	Kan. State Agr Col.	1863	168	80	743,633 05	*	28,890 76	77,000	*	135,462 00	*	*	271
Kentucky	Agr. and Mech. Col.	1865	249	71	*	*	26,900 00	*	*	*b*34,000 00	*	*	52
Louisiana	State Agr. and Mech. College												
Maine	State Col. of Agr. and Mechanical Arts.	1868	88	3	132,500 00	*	7,500 00	120,000	12,000	(54,715 00		)	376
Maryland	Agricultural College.												

Massachusetts	Agricultural College	1867	96	*a*	145,000 00	96,000 00	13,868 00	100,000	55,000	50,000 00	*	5,000	383
Michigan	State Agr. College	.....	214	7	339,068 32	*	22,000 00	(*b*	*b*	*b*	*b*	*b*)	676
Minnesota	College of Agricul. and Mechanical Arts	1869	185	68	575,000 00	*	35,000 00	75,000	(	300,000 00		)	*
Mississippi	College of Agricul. and Mechanical Arts	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Missouri	Agr. and Mech. Col	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nebraska	Agricultural College	1871	*	*	*c*	*	*b*28,000 00	5,000	*	*b*	*	8,000	*
New Hampshire	College of Agricul. and Mechanical Arts	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*
New Jersey	Scientific School	1872	*	*	116,000 00	223,000 00	27,000 00	*	*	*	*	*	100
New York	College of Agricul. and Mechanical Arts	1868	336	64	3,008,402 00	1,791,000 00	230,000 00	*	*	*	*	*	250
North Carolina	College of Agricul. and Mechanical Arts	1875	199	*	125,000 00	*	7,000 00	*	(	*b*5,000 00		)	400
Ohio	Ohio State University	1873	242	38	526.467 17	12,073 38	33,320 00	29,600	7,700	13,850 90	*	6,000	332
Oregon	State Agr. College	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pennsylvania	Penn. State College	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rhode Island	Brown Univ. Agr. and Mech. Dep't	*	251	*a*	50,000 00	650,000 00	69,350 00	*	*	*	*	*	15
South Carolina	Agricul. College and Mech. Insti	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tennessee	Tenn. Agr. College	1869	*	*	400,000 00	*	23,960 00	*	*	*	*	*	280
Texas	Agr. and Mech. Col	1876	258	*a*	174,000 00	*	14,280 00	187,000	(	15,000 00		)	2,416
Vermont	State Agr. College	*	78	12	135,500 00	100,000 00	12,000 00	*	*	*	*	*	30
Virginia	Agr. and Mech. Col	1872	148	*a*	171,000 00	*	20,658 72	60,000	*	*	*	*	330
West Virginia	W.Va. Univ. Agr. Dep't	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wisconsin	College of Arts	*	308	98	271,938 00	226,796 00	82,000 00	250,000	30,000	370,000 00	*b*12,000	40,000	220

* None reported.
..... Not heard from.
a No females.
b From annual tax.
c Endowment from old college.
d Not organized.
e Land not sold.

Quite a number of the institutions named above have no independent organization, but have been associated with pre-existent universities under the name of "colleges," "institutes," and "departments of agriculture and mechanical arts." In such cases, therefore, any comparison made to determine the relative success attained in the different States, the circumstances pro and con should be estimated, it being admitted, as a general rule, that through the alliance of these Congressional Colleges (so-called) with the old State institutions, the former come to an immediate inheritance of local popularity, and, most frequently, of additional monetary endowments, contributing, in some measure, both to the patronage and teaching force; elements which others, starting out on a separate career, cannot control. On the other hand, the dwarfing tendencies of unwise restrictions imposed by these old institutions upon the new under a joint control, prevent that rapid and strong development which time and a liberal course of management are sure to bring to independent organizations.

Other conditions also must modify any estimate of relative success. Among these is the *time* that the institution has been in operation. Although the Congressional grant was made to all the States at the same date, and was equal in amount to population (being in the ratio of 30,000 acres of land to each State Senator and Representative in Congress), some of the States did not accept the grant at once, and others, after accepting its conditions, continued to hold the land for a considerable period of time; or else, having sold the lands, held the parent fund for some years at interest before any positive organization was effected, thereby, greatly increasing the amount of available endowment.

There are facts, however, contained in the table by which it seems that the prosperity of any of these institutions may be graduated. The immediate annual revenue available for needed expenditures in the line of instruction, and the supplementary State appropriations for other unprovided wants largely measure the success in any given case. If our own institution is in any way exceptional to this general rule, the difference can only arise from the unconsidered, yet liberal amount donated by the county of Franklin, and used in the purchase of the land and the erection, at its very beginning, of the main college building, the dormitories and farm-houses.

Of the amount reported in the table as appropriated by the State of Ohio, $10,650.00 was for the expenses of the Trustees in selecting a location for the college, and in the management of its affairs. If the remaining sum of $45,500.00, stretching over a period of eleven years, should be construed as an expression of the liberality of the State, or its apprecia-

tion of industrial education among her citizens, it would be doing an act of injustice to her honor and her principles, for the State has always been liberal in contributing to the cause of education. The Trustees have heretofore asked State aid for the more pressing wants only of the University, where, upon economic principles, the largest results of good could come through its expenditure.

The Board still continues to recognize the necessity of enlarged facilities for the prosecution of satisfactory horticultural and agricultural work and instruction, and will renew its application to the Legislature for appropriations to these objects. The want of State aid in these departments was deeply felt a year ago, and would have been pressed upon the attention of the General Assembly had not the imperative wants of the University in other directions where delay would have imperilled valuable interests, required immediate attention. The Professor of Horticulture, in his last annual report, makes use of the following language:

I would call attention to the fact that, for several years past, the utter want of facilities for any horticultural instruction at the University has been the subject of equally just and severe criticism. Not a dollar has been appropriated by the State for this vitally important purpose. The department, as it stands to-day, has scarcely a single appliance—even such as the humblest nurseryman, fruit-culturist, or florist is obliged to secure in order to commence his operations. There may have been good reasons why this is the case, but they no longer exist. It is high time, in this age of universal progress, that this department do something.

The imperative needs of the department are as follows:

1. In order to do efficient work, and make the department really useful in the way of instruction and experimentation, we require a separate building dedicated to Botany and Horticulture. Upon the first floor of this building there should be a well-furnished class-room and suitably appointed laboratories; also, an office and seed-room. The second story should contain the museum and store-rooms. There should be a capacious frost-proof basement for the storage of fruit and garden products, for stocks, root-grafts, etc., for the nursery, and rooms where many of the practical horticultural operations could be carried on. Such a building can be erected and properly equipped for about ten thousand dollars.

2. We need a neat, well-constructed green-house—not an expensive conservatory—but a structure adapted to the propagation and preservation of plants for study by the students of Botany, for the rasing of bedding plants for the college grounds, and for raising cuttings and seedlings of fruits, ornamental plants, vegetables, etc., needed in the garden and nursery. Such a structure is also necessary merely to illustrate the subject of plant-culture under glass. It should be erected in connection with the building above mentioned, and constructed in the most approved modern style, with the best heating apparatus. The cost should not exceed five thousand dollars.

3. We need a dwelling-house for the Professor of Botany and Horticulture.

Additional reasons for such buildings is found in the fact that, under the act establishing an Agricultural Experimental Station, passed during the last session of the General Assembly, the station has been located on the grounds of the University, and Professor Lazenby invested with the directorship. Among other provisions of the act, section 5 recites that

"The Board of Control shall locate said station and shall appoint a competent director, who shall have the general management and oversight of the experiments and investigations necessary to carry out the objects of the station."

These objects can not be reached without provision being made in the way of buildings for experimentation, storage of soils and seeds, and like important purposes.

The terms of the agreement between the Trustees of the University and the Board of Control, locating the station at the University and its management, are set forth in detail in the proceedings of the Board of date August 1, 1882, and further reference to them need not be made here.

The act creating a Meteorological Bureau at the Ohio State University, passed April 17, 1882, and appointing the Professor of Physics (T. C. Mendenhall) as President of the Board, with certain necessary powers for carrying on the same, requires that monthly and annual reports of the expenditures and observations be made *directly* to the Governor by the Professor in charge. No reference to its operations are made, therefore, in this report.

The course of lectures for farmers delivered at the University during the past winter, on various topics connected with Agriculture, Horticulture, Botany, and kindred subjects, called to the University the usual large attendance of intelligent farmers from different sections of the State. Their expressions of satisfaction and appreciation at the conclusion of the course, will warrant its continuance. This desirable connection between the agricultural portion of our community and the University was further extended through the medium of what are called Farmers' Institutes, which are held in many counties of the State under the joint management of the Ohio State Board of Agriculture and the University. A number of the Professors, by and with the consent of the Board, have been in attendance upon these meetings during the past season, and by their lectures on subjects of general interest, and by social interchange have done much to make known the general aim and liberal purposes of the University.

The Board regards the continuance of such a course one of the best

means of thoroughly advertising the institution, and thereby bringing its benefits to the notice of a larger class of citizens than could be reached otherwise.

The expenses of the professors in going to and returning from these institutes were borne largely by the University, and arrangements were made by which their absence from the lecture-room would work the smallest possible detriment to their classes.

By reason of the retirement of the Farm Manager, and the introduction of a Professor of Horticulture and Botany, a change in the system of managing the farm has been made. Instead of being exclusively under the control of a farm manager, the Farm Committee of the Board made an apportionment of the land, implements, and labor between the Professor of Agriculture and the Professor of Horticulture, allowing the employment of a competent clerk for the joint use of each, in the keeping of all accounts, records of experiments, and seeing to the execution of work ordered by both. Other matters pertaining to the buildings, stock, etc., on the farm, fall exclusively to the care and control of the Professor of Agriculture. Each professor, therefore, has had separate supervision of his part of the general work, and the ordering of all details arising therefrom. The reports of these professors, containing much valuable information, will appear in full elsewhere in the body of this report.

Dr. Townshend was authorized to attend the convention of Agricultural Professors, held last June at Ames, Iowa. These conferences, among scholarly gentlemen of large observation and experience, must result in great advantage to the vital interest which they represent. An invitation to hold a session of the convention at the Ohio State University at some future time was extended and accepted.

The appropriation of $1,500 by the State "for ordinary repairs," has enabled the Board to keep the buildings in good condition. The repairs made have been chiefly to the roofs, chimneys, gas and steam pipes, and boilers, with less expenditures in plastering, glazing and painting. In the larger dormitory, six additional rooms have been fitted up. The heavy influx of students has called into requisition every available room, and many more could be used. The dormitories are now answering a good purpose in the advantages which they offer for cheap living to students of limited means. Their management is in every way satisfactory.

Insurance to the amount of $31,266 has been renewed during the year; $17,666 of this amount is on the contents of the buildings. A complete inventory of all apparatus and equipments of every kind be-

longing to each department has been prepared. These inventories are preserved in book form, and a valuation has been fixed, wherever admissible, to the different articles named. The aggregate of valuation, including the library, reaches $26,871.75.

The condition of the *internal* affairs of the institution continues to be highly satisfactory. The number of professors remains unchanged, and their department work is much the same as heretofore.

In order to make the annual financial exhibit of the Board clearly intelligible, it is recommended that such a change in the law regulating the calculation of the interest upon the Endowment Fund be made as will make the calculation of such interest conform to the *fiscal* year of the State; that is, that the interest on the permanent fund be computed to the 15th of May and the 15th of November, annually, instead of the 1st of January and the 1st of July, as at present.

"The course of instruction pursued, the number of students in the several departments, the amount of receipts and disbursements, and for what the disbursements were made," together with the statements of any experiments made, their cost and results, and other matters affecting the management of the University, are set forth in the accompanying reports of the officers in charge.

In conclusion, the Board desires to express its appreciation of the deep interest your Excellency has ever manifested in the University, and of your generous support of the Board in its management of this important State trust.

ALBERT ALLEN, *Sec'y.*

REPORT OF THE PRESIDENT.

OHIO STATE UNIVERSITY, COLUMBUS, *November* 14, 1882.

Hon. James B. Jamison, President of the Board of Trustees:

SIR: I have the honor to transmit my second annual report, including reports from the various departments of the University.

The rapid growth of the University during the past year is exhibited in the large increase in the number of students, in the additional buildings and equipments provided by the Legislature, and in corresponding developments of the internal organization of the institution.

The following tabulated statement shows, at a glance, the rate of increase in the number of students:

In November, 1873, there were	27	students,	from	10	counties.	
"	1874	"	59	"	22	"
"	1875	"	99	"	39	"
"	1876	"	120	"	42	"
"	1877	"	211	"	50	"
"	1878	"	198	"	52	"
"	1879	"	195	"	56	"
"	1880	"	235	"	61	"
"	1881	"	280	"	56	"
"	1882	"	340	"	61	"

Quite a number of applicants were rejected because of insufficient preparation. The Preparatory department certainly affords a fair opportunity for pupils coming from the common schools and high schools to enter the University. The necessity of this two years course of preparatory studies is manifest from the fact that even graduates of many of the high schools of the State are not prepared to enter the Freshman class in any of the seven courses leading to degrees.

It is doubtless a great advantage to the students in the preparatory course to receive instructions from University Professors; but it is necessary to bear in mind that such training is not the end for which the University was endowed, and that a heavy draft is made upon the energies and the time of Professors who should devote themselves to higher educational work as far as possible. In the course of time it may become necessary to cut off the preparatory work and apply the resources of the University exclusively to collegiate and higher education. But

for the present it is plainly the demand of the State that we continue the existing policy of affording a full and fair opportunity to the primary schools of the State to make connection with the courses of study in the University.

Already the rapid increase in the number of students creates the necessity of providing more accommodations and additional instructors. Happily for the want of space in several departments, the removal of the departments of Chemistry and Mining and Metallurgy, at the beginning of the winter term, into the commodious laboratories which will then be completed, will enable the Faculty to provide more comfortable rooms for many crowded classes. Yet even the large increase of space thus acquired will not relieve certain pressing demands for more room to which I must presently refer, while the ratio of increase in the number of students will soon again overflow the spaces vacated by the departments removed into the laboratory building. So far as recitation rooms are concerned, therefore, we shall get along comfortably during the latter part of the current year, and perhaps longer.

But the necessity of additional instructors is a more serious problem. To any person competent to judge of teaching, the difficulties appear in the single statement that a Faculty of sixteen, aided by five or six assistants, undertake to instruct 340 students in courses of study leading to seven different degrees through six years of preparatory and collegiate work. The Board wisely granted to Professor Tuttle, of the department of Zoology and Comparative Anatomy, a leave of absence for the current year, in order to pursue original investigations, which will doubtless result in adding much to the efficiency of his already superior work. It is certainly an important feature of the policy of this University to grant leave of absence, after years of faithful service, to a professor, who gives proof that by a period of freedom for original research he can lift his department to the highest grade of excellence in University work. Mr. Horace L. Wilgus, one of our graduates, and Mr. Clarence C. Green have charge of classes in Elementary Physiology and Zoology during Professor Tuttle's absence, while more advanced work is postponed until his return.

The State has laid the University under tribute for the services of Professor Orton as State Geologist; and, notwithstanding he labored with a corps of assistants during the entire summer to complete the survey of materials for the forthcoming volume on the Economic Geology of the State, the magnitude of the work has made it necessary for the Board to grant Professor Orton leave of absence for the present term. The Professor of Mining and Metallurgy has taken charge of the Junior

class in Geology in Professor Orton's absence, while temporary assistance has been provided for other classes. Rev. A. C. Hirst, formerly professor in Ohio University at Athens, and Mr. McCoard have been engaged for the present term to teach sections of preparatory classes in Latin and Algebra.

But even with these acceptable additions to the corps of instructors, the fact remains that many classes are too large to be thoroughly taught. It is nothing to the point that the instruction may be as efficient as the average of college work. It is the duty of the State University to do the very best work possible; and it should therefore be supplied with the requisite number of thoroughly competent instructors. This institution, though opened only nine years ago, has earned an enviable reputation throughout the country for the thoroughness and excellence of its educational work. But such good results have been due not merely to superior equipments in the hands of an able Faculty, but also to the fact that hitherto the various classes have been small enough for the application of thorough methods of instruction. At the present rate of growth, however, the best methods of instruction can not be applied for even a year or two longer without increasing the number of instructors. This criticism applies to some of the college classes, as well as to nearly all the preparatory classes. In most of the college classes in the several departments of the University the professors are doing most excellent work, which it would be difficult to surpass in any college in the country; but in the preparatory course the work falls short of what the State University ought to do, notwithstanding the superior equipments which have been provided. The classes are divided as much as possible, but it is a physical impossibility for the ablest teacher to instruct thoroughly in languages or in mathematics classes including from 40 to 60 students.

It becomes my duty, therefore, to call the attention of your honorable body to the necessity which the constant increase in the number of students will impose upon you of adopting measures for increasing the corps of instructors in the near future, or of limiting the number of students. Their number can be diminished either by charging a sufficient amount of tuition in the preparatory department, or by cutting off one or both years of the preparatory course. It seems to me to be altogether desirable neither to charge tuition nor to cut off the preparatory course in the near future.

As I have already intimated, the Faculty have adopted a better organization of the students, which seemed to be required by the growth of the University. This organization was put into operation with the

beginning of the current year. Hitherto students have been divided into four groups: Regular students, those included in the four college classes; Special students, those having attained college rank by completing preparatory work, and thereby permitted to select studies; Preparatory students, those pursuing regular preparatory studies; and Unclassified students, all not admitted to any of the three groups already named. Such a classification grew out of the large liberty of election accorded to students. While many of the unclassified students were pursuing successfully advanced work in particular lines, the Faculty became convinced that there was much irregularity due to a lack of definite purpose in many cases and to mere whims in not a few.

It was therefore not a desire to depart from the liberal policy which should always characterize the State University of affording special facilities for particular studies to students having definite aims, but rather a determination to secure the best training in all courses of study, which led the Faculty to organize the various departments of the University into four schools, designated as follows:

The School of Arts and Philosophy, including those studies which enter into the courses leading to the degrees of Bachelor of Arts and Bachelor of Philosophy.

The School of Science, including those which enter into the course leading to the degree of Bachelor of Science.

The School of Engineering, including those studies which enter into the courses leading to the degrees of Civil Engineer, Mechanical Engineer, and Mining Engineer.

The School of Agriculture, including those studies leading to the degree of Bachelor of Agriculture.

The Faculty of the University has been subdivided into committees corresponding with these schools, and all matters pertaining to the studies of students in any school, or to minor discipline therein, are under the control of the committee of said school.

The committees are as follows:

For the School of Arts and Philosophy—the President, the Professors of Latin and Greek, History, Geology, Chemistry, and French and German.

For the School of Science—the President, the Professors of Mathematics, Chemistry, Physics, Geology, and Zoology and Anatomy.

For the School of Engineering—the President, the Professors of Civil Engineering, Mechanical Engineering, Mining Engineering, Physics, and Drawing.

For the School of Agriculture - the President, the Professors of

Agriculture, Horticulture and Botany, Mechanics, Metallurgy, and Zoology.

Every student (resident graduates alone excepted) is required to enter one of these schools, or in case of irregularity, will be assigned to the school in which the greater part of the student's work may be found. There are no unclassified students.

All students in each school are regarded as belonging to one of two groups: first, those whose purpose it is to enter upon one of the regular courses of study with the expectation of taking its degree; second, those who come to the University for the purpose of pursuing some special study or line of work, and who do not expect to take a degree.

The courses of study leading to the various degrees having been arranged by the Faculty in the order which they believe to be the best adapted to the general requirements of students, *all who do not belong to the second of the groups indicated* will be required to enter upon the regular work of the college classes to which they belong, or in case of present irregularity, to remove such irregularity as speedily as practicable, in the manner prescribed by the committee of the school in which they are classed, and no such student will be allowed to take more or other than his regular studies without presenting a request with reason therefor to his committee, and receiving its consent. Such consent may be revoked at any time when it may seem advisable to do so.

Students belonging to the second group, viz.: those coming to the University for a limited time, with the definite purpose of pursuing some special line of work, will in each case enter the school in which their proposed work is chiefly included, and shall lay before the committee a statement of the end in view, the studies proposed for the accomplishment of that end, and the probable period of residence.

While it will be the purpose of each committee, in accordance with the well established policy of the University, to allow to such students full freedom in the selection of the branches which they desire to pursue, subject only to the necessary limitations that they are prepared to take up the branches they select, and that such branches are in accordance with the end proposed, it is also their intention to hold students as regularly to the performance of their accepted schemes of work as they do the members of the first group to their prescribed course of study; and they will refuse admission to this group to all of whose definiteness of purpose or fitness to undertake the work proposed they fail to receive satisfactory evidence.

It gives me pleasure to report that the Battalion of Cadets is in a

very excellent condition. There are now over two hundred students in the ranks. They are organized into four companies. With the beginning of the present term the discipline was made more rigid in minor matters than it was last year, and the result is obviously advantageous to all the interests of the University.

No able-bodied student is excused from the requirements of the drill, except a very few who are excused for want of means to purchase the uniform. In case of physical disability, a physician's certificate is required. The drill takes place four times a week, and occupies three-quarters of an hour at noon. It is made a part of every course of studies up to the beginning of the Junior year. Juniors and Seniors are done with the drill, but may voluntarily retain membership in the Battalion, which some desire to do. I beg leave to record my appreciation of this most excellent feature of our University system, and to declare my judgment that no equal portion of time devoted to other work in any department of the University produces larger and better results than the drill, in all that relates to the education of the citizen.

The two dormitories are filled with students, and many others would be glad to gain admission if there were room. During the past year the conduct of the young men in the dormitories was so excellent that I had no occasion for even the least exercise of discipline. By your direction the management of the dormitories is placed in the hands of the President of the University. I have simply followed the wise method of my predecessor, President Orton. The amount of care involved in the management of the dormitories is really trifling, in view of the constant and unexcelled good conduct of the young men.

There is no difficulty in obtaining suitable boarding places for students in private families, but the cost of living in such families is from one to two dollars per week more than the expenses in the larger dormitory.

It would be an obvious gain to the University if another dormitory were provided for the young men. In this connection let me call the attention of the Board to the need of a hall for the young ladies. There are now forty-one in the University. They have all signed a petition to the Board of Trustees, asking that a boarding hall be provided for themselves on the University grounds.

I heartily endorse the petition. The young women are quite as clearly entitled to such accommodations as are the young men. Indeed, it is simply unjust to impose upon young ladies the necessity of higher expenses in obtaining their education than young men are required to pay. Surely, this University knows by experience that

young women are wholly competent in every way to do University work in the same classes with young men without asking or receiving odds on account of their sex. Moreover, on the score of discipline for all minor delinquencies, it is so seldom that a young lady is reported to me from any department of the University that there would be no need of keeping any record at all, if the young men were as faithful and diligent as the young ladies And as for the personal behavior of the young ladies, both in and out of the class-rooms, it not only needs no record of short-comings, but is such a positive good influence upon the whole working order of the University, that we could not for any consideration be induced to part with such moral power, even if regarded merely as an educational factor. I know, of course, what has been said, and will continue to be said respecting the collegiate education of young ladies in the same classes with young men by those who speak without any experimental knowledge of the subject. I sympathize with some, at least, of the conservative feelings which give rise to the difficulties such persons are wont to prophesy. But the fact remains that these difficulties exist solely in the imaginations and prejudices of the persons that describe them. It would be wholly amusing, if it were not partly pathetic, to read the discussions now going on in some of the oldest universities and colleges in the East in regard to extending the same privileges of education to young women, which the young men have hitherto exclusively enjoyed. To continue a custom which is based upon wrong, will never make it right.

Happily for this University, young ladies were admitted at the beginning upon equal terms with the young men, and experience has justified the policy as being right in every way. But we now have a sufficient number of young ladies to make it desirable to erect a boarding hall upon the University grounds, as similar institutions have done with complete success. No reason that will bear examination can be brought against this petition of the young ladies, and I trust the matter will receive the favorable consideration of the Board.

The Legislature last winter provided for some of the pressing wants of the University in a manner that was very gratifying. It appropriated $20,000 for the erection of laboratories for the departments of Chemistry and Mining and Metallurgy. The building is now nearly completed, and will be occupied at the beginning of next term. It covers an area somewhat more than 8000 square feet. If extended in one direction, it would be 200 feet long, and over 40 feet wide. It is in the form of the block letter T, the front measuring 160 feet, and the center 80 feet in depth. The building is two storeys high. The upper

storey is assigned to the department of General and Applied Chemistry; the lower storey to the department of Mining and Metallurgy, together with the department of Agricultural Chemistry, yet to be established.

The laboratory of General and Applied Chemistry is modeled after the great laboratory of Leipzig. There is a fine lecture-room, well lighted from the east and west sides, 40 feet square, with a high ceiling. The seats for students are raised in tiers, affording a clear view of the lecture table. Back of this table is the preparation room. At one end of the table a balcony is arranged under the open sky for exceptionally offensive reactions. The walls of the lecture room will contain cases of specimens illustrative of lectures, together with diagrams and charts, setting forth the ascertained facts and principles of Chemistry.

The west wing of the upper storey is devoted to qualitative analysis. It contains a large room, lighted on both sides, fitted with six special hoods, a large steam hood, three large poison hoods, and accommodations for thirty students at a time. Adjoining this laboratory are two rooms of general utility, one assigned to those operations in which poisonous or unpleasant gases are evolved, the other to large operations requiring the use of the forge, the blow-pipe, the workman's bench, etc.

The east wing of this storey is devoted to quantitative analysis. It has accommodations for sixteen students at a time, and is provided with the accessories of hoods before described. At the extreme end of the wing are four rooms assigned to (1) balances, (2) reference books, (3) gas analysis, (4) combustions, besides a closet for spectroscopic work.

Both of these anyalytical laboratories are constructed with reference to the best possible *ventilation*. Accordingly, each laboratory in addition to its hoods, has four nine-inch flues that *must* remain open whatever may be the theories or practices of the janitor. It has also, subject to the janitor, an opening extending the whole length of the ceiling and open to the sky. It has a transom for each window, opening inwards, easily controlled, while all the windows are so constructed that they can be thrown entirely open at once, whenever it may be desired to fill the laboratory speedily with fresh air. It is hoped that these devices will accomplish the all-important work of ventilation without requiring a very large expenditure of heat.

Besides the lecture-room and laboratories thus described, there are several other rooms in this upper storey—(1) the private laboratory of the Professor, (2) a working-room for his assistant, (3) store-room, (4) distillation-room.

The space needed to light up the hall will have on both walls cases

containing specimens illustrative of Industrial Chemistry, always open to inspection.

The department of Mining and Metallurgy occupies two-thirds of the space in the lower storey—the west and north wings. The lecture-room is in the west wing. Connected with it is a large room for the mineralogical and metallurgical collections. The department is constantly receiving ores, slags, and metals, for analysis and assay and examination, and a collection is making of a complete series of such materials illustrating the occurrence and process of extraction of the various metals.

Also, in connection with the lecture-room, is a private room and laboratory for the Professor, where the analysis for the State Geological Survey and such similar work as pertains to the department can be done.

Opening into the collection-room is a small laboratory for blowpipe analysis and determinative mineralogy, where students are provided with tables equipped with reagents and apparatus for blow-pipe work. It is intended that each student shall have training in experimental determination and testing of minerals. This laboratory is provided with hoods, and is well lighted.

The assay laboratory occupies the north wing on the ground floor. It is forty feet square. The floor is several feet lower than that of the east and west wings of this lower storey, and the increased height of the ceiling in the assay laboratory thus acquired is of great advantage in affording relief from the heat and smoke arising from assay furnaces. The floor is made of cement, and the furnaces are so arranged as to discharge their ashes into the basement, thus preventing the accumulation of dust and dirt in the laboratory.

The laboratory contains flues for eight crucible furnaces, and one large double muffle furnace, sufficient to accommodate twenty students. It is fitted also with flues for acid hoods, sand-baths, etc. Four large desks are provided with accommodations for sixteen students at a time.

Opening into this laboratory are two smaller rooms for balances and the apparatus for bullion assay, which requires protection from rapid changes of temperature. The laboratory connects directly with a coke cellar in the basement

In the attic of the building there is an iron reservoir for water; the basement contains a cellar eight feet deep. The whole building is of brick, with slate roof, and presents a very satisfactory appearance.

The Legislature also organized an Agricultural Experiment Station and appropriated $3,000 for the expenses of the first year. The Board

of Control located the station at the University, and ample space upon the grounds has been set apart for carrying on experiments upon a scale commensurate with the needs of the State. The full report of these experiments, which will be issued by the Board of Control, will doubtless show at once the great need and the great value of this experiment station to the State, and the University may well rejoice in its establishment.

Professor Lazenby, of the department of Horticulture and Botany, has been appointed Director of the Experimental Station, and Mr. William B. Alwood has been selected as Foreman.

The Legislature likewise established a State Meteorological Bureau and appointed the Professor of Physics in the State University as Director of the Bureau. An appropriation of $2,000 was made. Standard instruments of observation have been provided at the University, and corresponding instruments for voluntary observers in different parts of the State—one in each Congressional district. The Bureau will issue monthly reports of meteorological observations, which cannot fail to be of great economic value when joined with the monthly crop reports, issued by the State Board of Agriculture, to say nothing of the scientific value of such observations.

The Legislature also authorized the expenditure of funds arising from the sale of Virginia Military Lands for the purpose of erecting additional residences for Professors upon the University grounds. Thus far three houses have been erected, and will soon be ready for as many Professors. The University will gain much by the increased efficiency of these members of the Faculty, who have hitherto lived several miles away from their work. We greatly need several more residences in order to locate as many as possible of the Professors upon the University grounds. The time and labor and skill of the Professors, gained to the University by bringing the Faculty together in homes upon the campus, are far more valuable even in the market than the cost of the necessary residences.

In the beginning of this report I alluded to certain accommodations greatly needed in addition to the rooms for classes now happily provided for by the erection of the new laboratories. I refer to the utter lack of a suitable place in which to hold commencement exercises and public assemblies, and to the need of a drill hall. The lecture-room is now barely sufficient to afford seats for the students alone. At commencement, even if all the students were excluded from the room, it would still be densely crowded with a small minority of the people that endeavor to attend these closing exercises of the year, and a great many

persons declare that they make no effort to come to the University on that day, because it is of no use to attempt to get into the assembly-room. Great interest was manifested at the recent commencement in the public performances of the graduating class, which were very creditable to the University. Surely ample accommodations ought to be provided for these most important performances, as well as for other and frequent assemblies of the people who may be invited to attend University exercises.

As to the drill hall, the need has become well-nigh imperative on account of the increase in the number of cadets. When the weather will not admit of out-door drill, which is frequently the case during the winter season, the drill must take place in the halls of the main building and be restricted almost wholly to the manual of arms. But even for this exercise there is now no room to spare, and if the number of students shall be increased next year by the usual ratio, it will be impossible to carry on the drill in an effective manner during bad weather.

I desire to call especial attention to the report of the department of Horticulture and Botany, and to renew and urge the recommendation made in my report a year ago, that a suitable building and appliances be provided for this newly organized and very important department of the University. At least $15,000 is needed for this purpose. From every point of view this department ought to be thoroughly equipped at once. I need not enlarge upon the full report of Professor Lazenby, but cannot forbear to repeat with emphasis my conviction of our duty to press the wants of this department upon the attention of the Legislature.

In this connection let me refer to the lectures to farmers, which were delivered by the professors at the University during January last. There was a large attendance and unfailing interest. A similar course of lectures is arranged for January next. The date of the annual meeting of the Agricultural Convention was changed by action of the Legislature, so as to enable members of the Convention to attend this course of University lectures. During the course no Farmers' Institutes will be appointed by the State Board of Agriculture, so as to enable farmers from all sections of the State to attend the lectures at the University, as well as those to be delivered at the various Institutes. The services thus voluntarily rendered by the Professors during the past year, in different parts of the State, were well received by the large audiences that attended the Institutes. And there is no room for doubt that the armers and other industrial classes so largely represented at these In- s throughout the State, are awakening to the call for the thorough

equipment of the various departments of the University relating to Agriculture and the Mechanic Arts; and among these there is no department more needy of immediate equipment than the department of Horticulture and Botany.

I cannot refrain, while mentioning the great necessities of the University, from calling attention once more to the Library. Surely the Legislature ought to do something towards filling this vacuum. In addition to the appropriation of three hundred dollars for books, which the Board made for the current year, to be distributed by the President of the University among the various departments, a special appropriation of two hundred dollars was made for the classical department; and Professor Derby has obtained therewith 177 volumes of Teubner's Edition of Greek and Latin authors. These are beautifully bound, and form the proper nucleus of a classical library. The Board further appropriated one hundred dollars to purchase books for the department of Philosophy and Political Economy, making a total of $600 for the library for the current year as compared with the usual appropriation of $300.

But, while such additions to the library are very acceptable indeed, they fall far short of what is actually needed by the daily work of the various departments. The library has been utilized as far as possible as a reading-room. It may be too much to hope that the State will now provide a library building fully equipped, but we certainly need a large reading-room to be kept open at all hours. Such a reading-room is a real laboratory, equal in importance and practical value with any other.

I beg leave to submit herewith memoranda of the ordinary wants of the several departments:

In regard to the department of Philosophy and Political Economy, I have the honor to report that I am now engaged in teaching a class of Seniors in Ethics, of Juniors in Psychology, and of Sophmores in English—the Art of Discourse. There are 39 students in these classes. I also have charge, during the year, of the public rhetorical exercises of the college classes. These exercises are held once a week in the Lecture Room of the University. The Seniors deliver original orations, the lower classes declamations and essays. Much interest is manifested, and good work is done by every class. I have the honor to remain,

Very respectfully, yours,

WALTER QUINCY SCOTT.

Ohio State University, November 15, 1882.

DEPARTMENT REPORTS.

DEPARTMENT OF GEOLOGY.

President Walter Quincy Scott:

SIR: I present, herewith, the annual report of the department of Geology, and of my professorial work for the calendar year, which ends on November 15, 1882.

The full statements of the last annual report, as to the scope and character of the work of the department, it does not seem necessary to repeat. I will, accordingly, confine myself to the essential facts.

My classes for the year have been as follows:

Fall Term, 1881—Juniors, General Geology, daily, 10; 1st Preparatory, Physical Geography, Section A, daily, 37.

Winter Term, 1882—Juniors, General Geology, 3 days a week, 10; 1st Preparatory, Physical Geography, Section B, daily, 15.

Spring Term, 1882—Juniors, General Geology, 2 days a week, 10; Juniors Economic Geology, 3 days a week, 4.

In addition to the work of my own department, as shown above, I taught during these three terms the Second Preparatory Class in Latin, comprising 31 members.

The recitations of this class were daily. I also taught one section of the class in General History during the Spring term, which numbered 19 members, the recitations of which were daily.

The Rhetorical exercises of the college students were placed in my hands.

In April of the present year, the State Legislature made provision for a temporary resumption of the Geological Survey of the State, with which I have been connected during all of its course. I was appointed by Governor Foster to execute the work thus ordered. I hoped that I could finish that portion of it which would necessitate my absence from the city, during the summer vacation, but I was not able to do this, and I was therefore reluctantly compelled in September last to apply to the Board of Trustees for leave of absence during the present college term. My request was granted, and I was empowered to make such provision for my classes as should seem best on consultation with the President and Faculty.

My colleague, Professor Lord, generously offered to take charge of the exercise in General Geology of the Junior Class. The class numbers 22 members, and is making excellent progress. The two sections in Physical Geography of the First Preparatory Class, I turned over to two competent and faithful young men, both of whom had been successful teachers. The sections number 29 and 27, respectively, and the work of instruction is going forward in a satisfactory manner.

The class in Second Preparatory Latin, for which I am at present made responsible, numbers 39 members. For this class, I was fortunate enough to secure the services of an accomplished scholar and an experienced college officer, Rev. A. C. Hirst, of this city, under whom excellent work is going forward.

I am grateful to the Board for the unusual favor which they have accorded to me in this leave of absence. I shall return to my post next term to resume the varied duties of my professorship.

Very respectfully yours,

EDWARD ORTON.

Ohio State University, November 14, 1882.

CHEMISTRY.

President Walter Quincy Scott.

SIR: I have the honor to present this, my Tenth Annual Report of the Chemical Department of the University.

The number of pupils enrolled for the year ending June 21st, 1881, was:

In general chemistry	65
In analytical chemistry	23

The number of pupils enrolled for the year beginning September 14, 1882, is:

In general chemistry	88
In analytical chemistry	28

I am glad to be able to report a good record for cheerful and diligent work among the students in the Analytical Laboratory during the past year. Our crowded curriculum allows but two years to this course of study, which is barely sufficient time to lay a good foundation for intelligent and accurate work. For many reasons this is often cut short, and even by those who enter the University for "special work" in chemistry. The number of such students who are preparing to become pharmacists or physicians is steadily increasing, and I think it would be well to provide additional inducement for this class by a somewhat extended course in pharmacy and in materia medica. The various laboratories of the University offer unusual facilities for the collateral studies required. And I am moreover convinced that there is a growing demand for young men who have made such special preparation.

I regret to report that the progress of the class in General Chemistry, the last year, was not satisfactory. The average attainment was exceptionally low, although a few of its members acquitted themselves with credit.

The present year opens with bright auspices. The students in the Analytical Laboratory are, for the most part, taking the study from choice, and are, of course, willing to work. I expect that they will do well. So, also, I anticipate a good result from the general class. It is unusually large, and will be taught principally by lectures and frequent written recitations.

In the new laboratory a suite of rooms are provided for agricultural chemistry. I am led to believe that this important chair will not long remain unfilled.

As to the new laboratory, I have already given you a full account, and suppose that further mention is not required. It shows for itself that it is intended for work, and well adapted to the ends for which it was designed. I hope that there will be no delay in its completion and equipment. I believe that when finished it will be second to none in point of convenience.

I purchased for the reference library, last year, Fresenius's Zeitschrift—twenty-one volumes. These ought to be bound at once. We need more books of reference, and duplicates of the most important, and I hope that in the immediate future a way may be found to obtain for our use sets of the leading chemical journals. These are emphatically tools which no well regulated laboratory should be without.

Mr. David O'Brine, M.E., continues as my assistant. He has in successful operation a good sized class of voluntary students, in a course of lectures upon analytical operations. These lectures are exceedingly valuable, and, I have reason to know, are appreciated. I think Mr. O'Brine is deserving of a better recognition for his services to the University than he has yet received.

Very respectfully,

SIDNEY A. NORTON,

Professor of Chemistry.

Ohio State University, November 14, 1882.

DEPARTMENT OF AGRICULTURE.

President Walter Quincy Scott:

SIR: I respectfully submit the following report of work done during the past year by classes in Agriculture and Veterinary Science:

The junior class in Agriculture was occupied with the following studies:

1st term. Geology, and Chemistry of soils, their origin, description, composition, classification, adaptations and improvement, etc.

2nd term. Farm Crops, botanically and economically considered, modes of culture, insect enemies, etc.

3d term. Farm Management, accounts, buildings, fences, drainage, water supply, implements and machinery.

The senior class in Agriculture had the following:

1st term. Natural History of Domestic Animals, their varieties, characteristics and special adaptations, etc.

2nd term. Principles of Stock Feeding and Breeding.

3d term. Animal Products of the Farm, the dairy, wool-growing, etc., etc.

Since the last report these classes have had an average attendance of six students in each; the interest manifested by students has been commendable, and their progress satisfactory.

The classes in Veterinary Science had for their work:

1st term. General Pathology, nature of disease, symptoms, causes of disease, classification of diseases, etc.

2nd term. General Therapeutics, principles of treatment, remedial agents their effects and classification, etc.

3d term. Special Pathology, diseases prevalent among Stock in Ohio individually considered.

The weekly Veterinary Clinic, which is still continued, has proved of great benefit. With some additional facilities, which it is hoped will be afforded, this department may be made of great utility.

A full report of the management of the University Farm, and of the results of experiments for the year will be made to the Board of Trustees.

The fourth annual course of *Lectures to Farmers*, given in January of the present year, was well attended, and the interest of former years appeared to be fully sustained. At the close of the lectures a meeting was held of those who had been in attendance, and the desire was formally and unanimously expressed for a similar course in January, 1883.

With great respect, yours truly,

N. S. TOWNSHEND,
Professor of Agriculture.

Ohio State University, November 14, 1882.

DEPARTMENT OF MATHEMATICS AND CIVIL ENGINEERING.

President Walter Quincy Scott:

SIR: I have the honor to submit the following report touching the work done in this Department for the year closing October 31, 1882:

Fall Term, 1881—Civil Engineering, 19; Surveying, 36; Geometry, 32; Analytical Geometry, 28; Algebra, 56.

Winter Term, 1882—Algebra, 34; Geometry, 37; Calculus, 25; Civil Engineering, 25; Descriptive Geometry, 33; Astronomy, 32.

Spring Term, 1882—Calculus, 24; Trigonometry, 44; Civil Engineering, 19; Descriptive Geometry, 29; Astronomy, 27.

Fall Term, 1882—Algebra, 49; Analytical Geometry, 45; Geometry, 35; Surveying, 37; Civil Engineering, 23. Total, 689.

The work in all the classes has been, in general, satisfactory. Field-work, for the classes in Engineering, is carried on in the fall and spring terms, every day, when the weather permits. It consists in leveling, measuring heights and distances, setting out curves, cross-sectioning, mapping with the plane table, manipulating the sextant and the solar compass—in fine, practicing in almost every kind of work pertaining to the business of the engineer.

In the winter session, where field-work is ordinarily impracticable, the classes are instructed in all kinds of drawing pertaining to engineers' work, viz.: platting, isometric, axonometric, and topographic drawing; shades and shadows, and the general principles of perspective.

Very respectfully submitted,

R. W. MCFARLAND,
Prof. Math. and Civil Eng.

Ohio State University, November 14, 1882.

DEPARTMENT OF MECHANICAL ENGINEERING.

President Walter Quincy Scott:

SIR: I herewith present my annual report of work in the Mechanical Department.

Students of classes of fall term of 1881: Analytical Mechanics, 3; Thermody, namics, 2; Machine Drawing, 3; Mechanical Laboratory, 16.

Winter Term, 1882—Strength of Materials, 5; Machine Drawing, 4; Mechanism, 3; Prime Movers, 2; Mechanical Laboratory, 26.

Spring Term, 1882—Mechanism, 3; Machine Drawing, 2; Machinery and Millwork, 2; Mechanical Laboratory, 13; Advanced Calculus, 4.

Fall Term, 1882—Analytical Mechanics, 9; strength of Materials, 5; Thermodynamics, 3; Mechanical Laboratory, 14.

I beg leave to call attention to the fact that our Library is sadly deficient in works on Mechanical Engineering. It is to be regretted that our State and City Libraries contain almost nothing in this line, except some of the more common books, most of which are used as text-books. I have frequently called for books at these libraries for consultation, but have never found the book sought, except in one instance. I have therefore asked for $50 with which a lot of books named on a separate sheet might be procured. This, however, will only serve for a beginning of the list that is needed.

Our Mechanical Laboratory is deficient in instruments of precision, such as standards of length, standard caliper gauges, standard screw-thread gauges, ring and plug gauges. We are in need of such appliances to the extent of $500. These are needed for the higher exercises in practice, such as working to dimensions, and fitting. Means for higher experimentation were suggested in last year's report. Our need for these grows year by year, as the Department becomes filled with students of the higher subjects. Two thousand dollars could be expended with great advantage, and yet not carry the department beyond a fair comparison with the manufacturing appliances of the State.

Several specimens of materials and models have been added to the Mechanical Cabinet within the year, including a fine set of pieces of cold rolled iron from Jones & Laughlins, of Pittsburgh, and of case-hardened iron, illustrating the manufacture of finger guards for mowing machines, the latter being presented by the Champion Bar & Knife Co., of Springfield, Ohio.

Very respectfully, yours,

S. W. ROBINSON.

Ohio State University, November 14, 1882.

DEPARTMENT OF PHYSICS.

President Walter Quincy Scott:

SIR: I have the honor to submit the report of the Department of Physics for the past year:

Upon my return to the charge of this department, after an absence of three years, I found the instruments and appliances belonging to the same in excellent condition, and this must be attributed to the care and attention bestowed upon them by Professor Robinson, who, during that absence, had charge of both the departments of Physics and Mechanics.

About two years ago an appropriation was made for the purchase of a few instruments of precision, which were greatly needed in the Physical Laboratory. Some of these, principally a break circuit chronometer, by Vegus, and a chronograph, by Fauth & Co., have been received from the makers, and are now in daily use. A dividing engine, an instrument in great demand in laboratory work, was ordered long ago, from a well-known maker in Paris, and, I regret to say, has not yet been completed, but its arrival is confidently expected soon.

As a result of the changes made in the curriculum during the past year, the study of physics is now required in all of the courses, except that leading to the degree of Bachelor of Agriculture.

The students registered in this department last year were classified as follows:

Second Year, Preparatory	62
Sophomore Physics	13
Advanced Physics (Laboratory)	11

The large number of students in the Preparatory Class made a division of the class into two sections necessary.

The hour of recitation of one of these sections was necessarily the same as that for the Sophomore Class, and it was thus impossible for one instructor to do the work.

The department was fortunate in being able to secure aid from Mr. Newton M. Anderson, who, besides assisting in the instruction of the Preparatory class, rendered valuable service in connection with the laboratory work. I desire to place upon record my high appreciation of the value of Mr. Anderson's assistance, which was freely given throughout the year, and without cost to the University.

At the beginning of the present collegiate year, there was a marked increase in the number of students in this department, especially in the advanced work, the number being more than double that of the past year.

There were registered as follows:

Sophomore Physics	21
Advanced Physics (Laboratory)	21

The number of students in the Preparatory Class, which begins work with the opening of the second term, promises to be very large.

By the action of the Board of Trustees, Assistant Engineer F. H. Eldridge, U. S. Navy, who had been detailed by the Navy Department to give instruction in steam engineering in the University, was appointed Assistant Professor of Physics, and is now engaged in giving instruction in the department.

I am, yours truly,

T. C. MENDENHALL,
Professor of Physics.

Ohio State University, November 14, 1882.

DEPARTMENT OF MINING AND METALLURGY.

President Walter Quincy Scott:

SIR: I have the honor to present the following report on the work of my department during the past year. In the winter and spring terms there were in the special classes of the course in Mining Engineering and Metallurgy, eight students, two of whom completing the course, received the degree of Mining Engineer last June.

The Freshman class in Mineralogy (spring term) contained twenty-eight students, making the total number in this department thirty-six.

The present fall term opens with eleven students in the advanced classes of the department.

During the past year the Mining Laboratory has been in constant operation. Among other work, nearly a hundred analyses of commercial fertilizers have been made for the State Board of Agriculture, and the results published in their monthly reports.

All the chemical work for the present Geological Survey is being done in the laboratory. Mr. W. J. Root, being employed as my assistant by the survey, is devoting his whole time to that work. I am assisted in my own work, and in that of the department, by Mr. Edward Orton, Jr.

There will be needed to cover the expenses of moving into and fitting up the new laboratory, now being built, a small appropriation ; also, and most pressingly, an appropriation to provide means of enlarging and replenishing the small collection of minerals, drawing and apparatus of the department.

Very respectfully,

NATHANIEL W. LORD.
Professor of Mining and Metallurgy.

Ohio State University, November 14, 1882.

DEPARTMENT OF HISTORY AND ENGLISH.

President Walter Quincy Scott:

SIR: I herewith respectfully submit a report of the work in my department for the college year of 1881–1882. My class rolls for that period make an exhibit as follows:

First Term.

Senior Rhetoric	21
Junior (Advanced) History	21
Elementary U. S. History (I Section)	23
Total	65

Second Term.

Junior (Advanced) History	16
Junior English	4
Elementary U. S. History (II Section)	26
Total	46

Third Term.

Junior U. S. Constitutional History	13
Junior English	2
General History (I Section)	32
Total	47

Total enumeration of my classes for the year	158
Class in Anglo-Saxon, taught by President	8
Section of General History, taught by Professor Orton	18
Total of classes in History and English	184

Throughout the year, I taught a class of thirty-eight once a week in Hart's Composition and Rhetoric.

A similar service was also performed by Miss Williams; while Professors Tuttle, Lord, and Derby, each taught a section of the First Preparatory Class in English Grammar.

The year's work in History was conducted according to the old curriculum. It will be observed that the classes were more than ordinarily large. The plan of instruction outlined in my last report was substantially carried out.

Courses of lectures on the political, commercial, social and economic institutions of Mediæval and Modern Europe were delivered in connection with the text-book work. The English Constitution, the Present Condition of the Great Powers, and the Constitutional History and Civil Polity of the United States were respectively treated by lecture.

The change in our course of study, planned last year, and put into effect at the beginning of the present term, gives to History its due prominence. Thereby the study of United States Constitutional History is pursued in semi-weekly lectures through the senior year of all the baccalaureate courses. English Constitutional History, and the Political History of Europe during the XIXth century, together are allotted the same amount of time in the course for Ph.B.

The study of Mediæval and Modern History is taken up in the Junior year of the Ph.B. course as formerly, except that it is limited to three recitation hours per week.

The English work, of which you generously took a share, was divided between the old and new courses. The Rhetoric, prescribed by the former, was taught by me in the first term, while you relieved me of the Anglo-Saxon.

In the second and third terms the English of the Junior year, as prescribed in the new course, came to me regularly. In the present term the full work assigned to both Junior and Senior years is upon me.

In the Junior year the Anglo-Saxon is studied for a term, both as a classic and as the medium of work in comparative philology. In the second and third terms the historical growth of our language through Middle into Modern English is pursued.

In the Senior year the first term is devoted to the study and criticism of selections from English authors; while the history of English and American literature is studied in the remaining terms.

My classes for the present term are constituted as follows:

Junior Anglo-Saxon (twice a week)	11
Senior English (three times a week)	4
Junior Ph.B. History (three times a week)	3
Senior Ph.B. English Constitution (twice a week)	6
Senior U. S. Constitution (twice a week)	9
Elementary U. S. History (daily)	32
Total	65

The imperative need of the department is books.

Courses of instruction are completely organized and consistently carried out; the apparatus of investigation has been amply provided in the shape of printed reference lists; all the conditions for investigation are present but the one essential to the fullest success. The available materials at present are meagre and inadequate. Were a library provided, History and English could be pursued in the department with that thoroughness which true University work demands.

Respectfully submitted,

JOHN T. SHORT,
Professor of History and English.

Ohio State University, November 14, 1882.

DEPARTMENT OF GREEK AND LATIN LANGUAGES.

President Walter Quincy Scott:

SIR: I have the honor to submit to you my annual report.

The enrollment for the current term is as follows:

Sophomore Latin	6
Freshman Latin	26
Second Preparatory Latin	39
First Preparatory Latin	59
Junior Greek	8
Sophomore Greek	4
Freshman Greek	19
Total	161

All the classes named above continue through the year, and will be increased by a few additional members who enter the University at the opening of the second and third terms.

The total enrollment for the corresponding term of 1881 was 118.

In the text-books used by the Preparatory Latin classes no change has been made, but, as an experiment, the Second Preparatory Class will read Cicero's Orations against Catiline before beginning Virgil's Æneid.

The department is under renewed obligations to Dr. Orton, who has once more generously undertaken the instruction of this class, and thus rendered very seasonable aid. During his temporary absence the class has been intrusted to the competent hands of Rev. A. C. Hirst.

The Freshmen in Greek take White's Lessons in place of Leighton's, which has been the text-book in previous years. It is my purpose to read different selections, or authors, with successive college classes, so that the work of any two consecutive years will not be identical, though of equal range and educational value; by this plan greater interest will be awakened in the study of the classic languages, and in the literature and institutions of Greece and Rome, without any loss in thoroughness, which might be apprehended from a wider course of reading.

The appropriation made by the Trustees last June has procured for the department a full set of the Teubner Library of Greek and Latin Classics, in 177 well-bound volumes. This collection, well-known for its excellence in all the essentials of a good text edition, makes an admirable nucleus for a well-equipped classical library. It is now easy for the student to verify a quotation, follow out references, and compare readings, far beyond the narrow limits of his text-book, and he can hardly help gaining a much more adequate conception of the range and wealth of classic literature.

A few books of a more popular character, bearing upon the history and antiquities of Greece and Rome, have been added to our equipment, which has been further increased by the purchase of two additional wall maps in the Kiepert Series, viz.: the Roman Empire, and Ancient Italy.

We still need, for the satisfactory study of Cæsar, maps of Ancient Gaul of such size that military movements can be followed by an entire class at once.

To Miss Minnie O. Scott and Mr. Charles C. Miller, my assistants in the work of instruction—the former having charge of one section of the First Preparatory Class in Latin, the latter of the Sophomores in Greek—I am indebted for intelligent and painstaking service.

The classes under my immediate care are the remaining section of the beginners in Latin, the Freshman and Sophomore classes in the same language, with the Freshman and Junior classes in Greek—in all, twenty-one recitations a week.

Respectfully submitted,

SAMUEL C. DERBY,
Professor of Latin and Greek.

Ohio State University, November 14, 1882.

DEPARTMENT OF BOTANY AND HORTICULTURE.

President Walter Quincy Scott:

SIR: The following report of the work done and progress made in the Department of Botany and Horticulture during the year 1881–82 is respectfully submitted:

INSTRUCTION.

A tabulated statement, given below, shows the subjects taught and the number of students in attendance since the organization of the department one year ago:

	Subject Taught.	No. of Students.	No. of Lectures per Week.	No. of hours of Laboratory or Field Work.
First Term.—	Economic Botany	10	5	..
	Special Botany	4	2	3
	Fruit Culture	7	5	2
Second Term.—	Physiological Botany	7	5	..
	Vegetable Gardening and Seed Growing	4	3	2
	Arboriculture and Practical Forestry	4	2	3
Third Term.—	Structural and Systematic Botany	65	4	5
	Practical Floriculture	6	3	2
	Landscape Gardening	6	2	2
	Special Study in Vegetable Histology and Botanical Field Work	9	..	5

The above is a brief statement of the instruction given and the attendance during the past college year.

For the present term I am teaching the following classes:

10 Students in Economic Botany.
20 " in Compositæ and Gramineæ.
3 " in Fruit Culture.
2 " in Special Botany.

The instruction is given mainly by lectures, supplemented by reviews, laboratory and field exercises. Each subject is treated in as practical a manner as it is possible for me to present it. In fact, the aim has been *to train* as well as *to teach*—to form habits and develop powers, rather than explain words and impart knowledge. Many students come to the University with the idea that they are to *receive* an education. I try to show them that they are here to *educate themselves.*

While I have used my best endeavors to systematize the students' work, to help them over difficulties—to advise and direct—to stimulate and encourage, I have not tried to do their work, but have kept constantly in view how best to prepare them readily and accurately to acquire knowledge for themselves.

The greatest drawback to the successful progress of the students in the classes of advanced Botany and Horticulture is defective preparation in elementary Botany. Those students who took the course in structural and systematic Botany last spring, and are continuing their studies in this department, are making much better progress than those who have not had elementary or preparatory work. Just how this defect can be best remedied is not easy to point out. One of two plans might be adopted. Either require an examination of all who have not had the preparatory work here, or move the Botany from the Preparatory Department to the Freshman year, in the regular college courses.

Despite this defect, however, the general progress of the students in all the different classes has been very satisfactory, only a few having failed to pass the examinations.

A number of the students are taking an enthusiastic interest in special botanical and horticultural work, and are doing efficient service in adding to the collections, and in otherwise aiding in building up and strengthening this newly organized department in the University.

APPARATUS AND COLLECTIONS.

During the year a good beginning has been made in the way of collecting illustrative material of various sorts for the use of the department. A collection has been obtained, which, it is hoped, will form the nucleus of one of the best botanical and horticultural museums in the country, Of course, this great end cannot be secured at once. It will take years to accomplish it. Yet, if the project receive the substantial aid and encouragement it deserves, no one can doubt as to the final successful result. Among the most valuable collections made the past season is one of over twenty-five hundred specimens, representing at least six hundred species and varieties of the flowering plants of Ohio. These have been carefully selected, pressed, and some of the best specimens mounted for a permanent Herbarium. The remainder will be used as material for study, and for making exchanges. In addition to this, quite large collections of fruits, grains, seeds of weeds, and useful plants, specimens of the woods of the United States, etc., have been made.

NEEDS OF THE DEPARTMENT.

The most urgent and imperative need of the department is a well-constructed green-house, together with suitably appointed lecture-room, laboratories, rooms for museum, storage, etc. The department cannot be considered well-equipped until it is thus provided for. We need the green-house for keeping a collection of useful and interesting plants for study; we need it for propagating plants for the college grounds and gardens; we need it for performing various experiments, and for illustrating every branch of the study of Botany and Horticulture. It is just as essential and necessary for the students in this department as a chemical laboratory is for the student in the department of chemistry. We do not want a showy, expensive conservatory, but a neat, practical structure in the modern style of brick, iron, and glass, heated by hot water, built in the most careful manner, and of the very best material. Some have thought that a green-house alone would meet all the requirements. But this is a mistake. In order to be at all useful, the green-house must be connected with and a part of the laboratories and class-room. To prove that this is not an

imaginative but an imperative need, I will simply say that no one of the different State Universities, founded like ours upon the National Land Grant of '62, is without such equipment. The need of additional dwelling-houses upon the campus still exists. One is especially demanded for the use of the foreman of the gardens; for without this convenience, it is next to impossible to secure the services of just the right man for this important position.

As a means of illustrating the instruction in Botany, the department has great need of a series of botanical models, maps and charts.

THE EXPERIMENT STATION.

It is a matter of congratulation that the State Agricultural Experiment Station is carrying on its investigations at the State University. Without the University the station could do but little, and without the Station the University would lose valuable means of training.

This combination of the means and efforts of both can scarcely fail to achieve results beneficial to all.

A full report of the experiments conducted, and the condition of the gardens. orchard, nursery, ornamental grounds, and whatever pertains to the different outdoor divisions of the department, has been prepared, and will be submitted to the Farm Committee before the next annual meeting of the Board of Trustees.

ACKNOWLEDGMENTS.

I have been most ably assisted throughout the past year by Mr. Will S. Devo, and Mr. W. J. Green, two special students in Botany and Horticulture, whose faithful painstaking work has added much to the efficiency of the department.

The labors of the past year, slight and imperfect though they may seem, have yet laid the foundations for the upbuilding of a successful department—a department that shall be worthy of the University, and an honor to the State.

Very respectfully yours,

WILLIAM R. LAZENBY.

Ohio State University, November 14, 1882.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS.

President Walter Quincy Scott:

SIR: I have the honor to submit to you herewith the second annual report of the operation of the department of the Ohio State University under my charge.

Since the date of my first report the military organization of the students into a battalion of Infantry has been kept up. Toward the end of the school year, the number of students in the battalion decreased very much, by reason of many leaving school, and from other causes, but the interest in the drill of those who remained was well sustained throughout the year. At the beginning of the present term the accession of one hundred and fifteen newly admitted students to the ranks of those enrolled in the military department, brought the number of those in uniform and undergoing instruction to two hundred and eleven, of whom at this date two hundred and seven remain.

The military drills, beginning with the school of the soldier in the authorized United States (Upton's) Infantry Tactics, and extending through the school of the battalion, including parades, inspections, reviews and other military ceremonies, were carried on throughout the entire school year. When the state of the weather did not admit of out of door drill, the corridors and basement rooms of the University building were used for this purpose. In addition to the practical instruction already referred to, theoretical instruction in tactics and other military subjects was given to all those who desired to join the classes which were formed.

The work of the past year has been highly satisfactory and encouraging to me Several causes have contributed to make it so, and have also given to the military organization an acknowledged standing among the departments of the University. Early in the year a change in the uniform of the officers of the battalion was suggested, and approved by the Faculty. To properly carry out this change, necessitated new equipments of service swords and belts. Means for procuring these were allowed by the Board of Trustees. The practical result of this generous action by the Board was soon manifest in the renewed activity and zeal with which these young gentlemen entered upon and continued to perform the duties of their respective positions. This was followed soon after by a tender, on the part of the President of the University, of his services to the battalion for a public lecture, which resulted in securing means for purchasing, at a cost of two hundred and sixty dollars, a national and a battalion flag, which could not have been obtained in any other way. The formal presentation of these colors to the battalion, by the Governor of the State, attended by the Adjutant General and other State officers and members of the State Legislature, gave fitting occasion and opportunity to these distinguished gentlemen to bring before and impress upon the students, who on that day stood before them in the ranks of the battalion, the object, importance and necessity of military drill as a part of their educational training, in a way which could not fail to be convincing.

While keeping a close supervision over the instruction and discipline of the battalion, and attending in person every formation and military exercise throughout the year, I have given encouragement and opportunity to the company officers to exercise practically the various functions of their positions whenever I considered them qualified for these duties. On Decoration day, in May last, when the battalion took part in the public exercises of the day, and marched in procession with parts of several of the best regiments of the Ohio National Guard, it was commanded in a very creditable manner by its senior Captain, M. N. Mix. The battalion organization is still one of four companies, with the following officers and non-commissioned officers, viz:

Captain—J. T. Anderson, Assistant to the Commandant and Acting Field Officer at battalion drills.
1st Lieutentant and Adjutant—W. L. Peters.
————, Quartermaster (vacancy).
Sergeant—W. R. Pomerene, Sergeant-Major.
C. H. Hirst, Quartermaster-Sergeant.
Edward E. Sparks, Leader of the Band.

Company A—
1st Lieutenant—C. S. Amy, commanding.
1st Lieutentant—H. K. Terry.
2d Lieutenant—M. T. Dozer.
1st Sergeant—J. P. Milligan.
Sergeant—F. A. Taylor.
Sergeant—S. B. Beebe.
Corporal, ———— (vacancy).
Corporal, ———— (vacancy).
Corporal, ———— (vacancy).

Company B—
1st Lieutenant—W. S. Devol, commanding.
1st Lieutenant, ———— (vacancy).
2d Lieutentant—H. L. Stockwell.
1st Sergeant—W. H. McKinney.
Sergeant—Chas. P. Smith.
Sergeant—W. W. Keifer.
Corporal—F. W. Martin.
Corporal—Otto Schroll.
Corporal, ———— (vacancy).

Company C—
1st Lieutenant—N. W. Gilbert, commanding.
1st Lieutenant, ———— (vacancy).
2d Lieutenant—Geo. R. Twiss.
1st Sergeant—Theodore Tallmage.
Sergeant—W. H. Miller.
Sergeant—E. J. Converse.
Sergeant—James Haig.
Corporal—Frank Miller.

Company D—

1st Lieutenant—Wm. Neil, commanding.
1st Lieutenant—Winfield Scott.
2d Lieutenant, ———— (vacancy).
1st Sergeant—N. M. Wade.
Sergeant—Geo. A. Cunningham.
Sergeant—F. E. Hill.
Corporal—J. L. Gordon.
Corporal—M. Dick.
Corporal, ———— (vacancy).

Sergeant George A. Cunningham is the National, and Sergeant S. B. Beebe the Battalion color bearer.

Very respectfully,

GEORGE RUHLEN,
1st Lieutenant 17th U. S. Infantry, Professor Military Science and Tactics.

Ohio State University, November 14, 1882.

DEPARTMENT OF INDUSTRIAL ARTS.

President Walter Quincy Scott:

SIR: I respectfully present my Third Annual Report for the department of Industrial Art.

My classes in both Mechanical and Free-hand Drawing were much fuller the past year than the previous year, and I have had good reasons to feel greatly encouraged, both in regard to the increasing interest taken in the subject of drawing by the students, and the satisfactory progress made.

Following is a statement of the attendance in the classes during the year:

First Term.

Mechanical Drawing (Projection Drawing)	30
Free-hand Drawing	45

Second Term.

Free-hand Drawing	50

Third Term.

Free-hand Drawing	54
	179
Twice counted	30
Total for the year	149

The present year opens with an outlook quite as encouraging as the last. In the Projection Drawing class there are twenty young men from the departments of Civil, Mechanical, and Mining Engineering. The instruction given in this class prepares the young men for the study of Descriptive Geometry and the higher technical drawing, given in their respective courses. The lessons are given by class lectures, and the time devoted to the subject—two hours per day—is divided about equally between these lectures and the drawing of a progressive series of twenty-three plates. In the former the aim is to train the imagination of the students to apprehend clearly and quickly the exact appearance of any object by description—a very necessary faculty in the practical engineer—and in the latter, to train them to perfect accuracy and master-like execution in the drawing of the problems.

In the Free-hand department there are, this term, sixty-six young men and ladies, a larger number than has ever before been in the studio. I am encouraged to think that every year brings additional enthusiasm in this subject, and the progress made by individual students attests the genuineness of the interest of the members of the class. It has been my endeavor, as far as possible, to mould the course to suit the

tastes and desires of individual students, without, in any way, omitting what is of the most educational value. First of all, my students are trained to the correct perception of form, and the neat and careful delineation of it by accurately copying outline forms. I admit this is not the method of the French, to whom we usually look as guides in these matters, but inasmuch as our students, as a general thing, take drawing to enable them to record scientific observations and explorations, I am warmly in favor of a few weeks careful copying of difficult outline examples. After the student has learned to handle the pencil freely, pencil shading from flat copies is taught; and after that, shading from the actual objects with the leather or paper stump and powdered crayon or charcoal. The objects used in the order of their usage are wooden models of vases, etc., small and large casts, and life-size busts. At this stage students evince special desires or are advised to take up certain or all of the following branches: crayon drawing, from photographs from life, or from the Great Masters; water-color landscapes, or flower painting; oil painting, modeling in clay. For work in these branches the studio is supplied, to a limited extent, with copies and specimens of students' work of previous years. It is my endeavor to add to this equipment as much, from year to year, as are, in the judgment of the Board of Trustees, wise expenditures. I have been in art schools, and know how tiresome old copies become to the pupils, and into what mild ridicule and disuse they fall, even at the hands of new pupils.

Superior drawings are often willingly given to the department by the students, and these I intend to frame, using them as examples and guides to future students. Thus each year's class, by passing over the course and leaving behind evidences of its success, makes the success of following classes more certain, as *results* most plainly indicate *processes*.

I hope, before many terms, to have the department so equipped with copies, casts, and specimens of students' work, that many students will be attracted and not a few find their way through the door which may lead to a useful life in the field of art.

I am, sir, very respectfully, yours,

WILLIAM A. MASON,
Assistant Professor of Industrial Art.

Ohio State University, November 14, 1882.

DEPARTMENT OF FRENCH AND GERMAN.

President Walter Quincy Scott:

SIR: I have the honor to submit the annual report of the French and German departments.

Last year I had, as I have now, four classes—two in French and two in German. In the fall term of last year these classes had an enrollment as follows:

Sophomore French	13
Freshman French	30
Second Preparatory German	21
First Preparatory German	38

This present term they number:

Sophomore French	14
Freshman French	52
Second Preparatory German	16
First Preparatory German	50

The course of study in each of these languages runs through two years; but during the second year, the French has but two recitations per week.

The Sophomore French was limited to its present time at the beginning of the fall term last year. The plan for the year's work having been made, this left no time to make, in either the Freshman or Sophomore year, any change with a view to compensate the latter for its limited time. Therefore, the Freshman Class pursued the usual course of study, while the Sophomore endeavored to make as complete a Sophomore course as possible. But this year, in order to make up, in a measure, for the short time in the second year, I have deemed it best to bring the language itself into immediate practice in the first year of the study. Not that I claim to make use of the so-called natural method system, for this can be applied well only where the course can run through, at least, four years. But we have taken up in the Freshman Class the grammar of the language in the language itself. I have been told by old language teachers that this was impossible with beginners, but with the consideration that it was not a Preparatory, but a Freshman Class, I have believed it possible, and have so found it, and therefore have every reason to hope for success.

It will be seen that the German classes are in the Preparatory course. This study receives in the classes those who come here to take a scientific course. Thus they get, early in their collegiate life, the help that a knowledge of German will give as a modern language, in which is recorded much of the valuable scientific research of the age. Also, they are benefited in having their minds trained by that

careful and systematic study, which must needs be given to a new language. This first result prepares them for the higher and more special purpose of the study, which is to extend their range of thought. This is obtained when they bring the language into use by thinking in it, and by studying the thought already produced in it. The first result comes from the study of the Grammar and construction of the language during the first year, while the second will come from the more advanced synthetical course of the last year.

Respectfully submitted,

ALICE K. WILLIAMS,
Instructor French and German Languages.

Ohio State University, November 14, 1882.

CIRCULAR AND CATALOGUE.

FACULTY.

REV. WALTER QUINCY SCOTT, D.D.,
President, and Professor of Philosophy and Political Economy.

EDWARD ORTON, PH. D., LL.D.,
Professor of Geology.

SIDNEY A. NORTON, PH. D., LL.D.,
Professor of General and Applied Chemistry.

NORTON S. TOWNSHEND, M.D.,
Professor of Agriculture and Veterinary Science.

R. W. McFARLAND, LL.D.,
Professor of Mathematics and Civil Engineering.

ALBERT H. TUTTLE, M.Sc.,
Professor of Zoology and Comparative Anatomy.

SOLON W. ROBINSON, C.E.,
Professor of Mechanical Engineering.

THOMAS C. MENDENHALL, PH. D.,
Professor of Physics.

NATHANIEL W. LORD, E. M.,
Professor of Mining and Metallurgy.

JOHN T. SHORT, PH. D.,
Professor of History and the English Language and Literature.

SAMUEL C. DERBY, A.M.,
Professor of the Latin and Greek Languages.

WILLIAM R. LAZENBY, AG. B.,
Professor of Horticulture and Botany.

GEORGE RUHLEN,
First Lieut. 17th Infantry, U. S. A., Professor of Military Science and Tactics, and Assistant Professor of Mathematics.

FRANK H. ELDRIDGE,
Assistant Engineer U. S. N., Professor of Steam Engineering, and Assistant Professor of Physics.

WILLIAM A. MASON, JR.,
Assistant Professor of Industrial Art.

ALICE WILLIAMS,
Instructor in the French and German Languages.

SAMUEL C. DERBY, A.M.,
Librarian.

MINNIE E. BIRD,
Assistant Librarian.

ASSISTANTS.

DAVID O'BRINE, B.Sc., M.E.,
Assistant in Chemistry.

HORACE L. WILGUS, B.Sc.,
Assistant in Physiology.

CHARLES C. MILLER,
Assistant in Greek.

CLARENCE C. GREEN,
Assistant in Zoölogy.

MINNIE O. SCOTT,
Assistant in Latin.

WILLIAM H. MILLER,
AUGUSTINE D. SELBY,
Assistants in Physical Geography.

ORGANIZATION AND EQUIPMENT.

The Ohio State University is founded on the Congressional land grant of July, 1862. By that act a large amount of the public land was turned over to the several States, the proceeds of the sales to be devoted to the better education of the industrial classes. The share of each State was proportioned to its representation in the National Legislature, and thus six hundred and thirty thousand acres came into the possession of Ohio. This munificent gift was unfortunately pressed for sale upon a temporarily overstocked market, and the State realized only fifty-four cents to the acre. The total amount of the sales ($342,450) was, however, put at interest, and when the institution was opened, in September, 1873, the principal and interest together constituted a productive fund of something over $500,000, which has since been increased to a small extent, until an annual income of $34,000 has been reached.

The Legislature having passed an act to authorize the several counties of the State to raise money to secure the location of the University, an offer of $300,000 from Franklin county was accepted by the Board of Trustees, and the University was permanently located at Columbus. The money furnished by Franklin county has been mainly expended in the three following items: 1. The purchase of a valuable farm of three hundred and thirty acres, within the corporate limits of the city of Columbus. 2. The erection of a spacious and elegant college building, and two dormitories for students. 3. The equipment of the various departments of instruction in the University.

The total value of endowment and property at the present time exceeds $1,000,000.

The departments already established, and the provisions made for giving instruction in them, are as follows:

I. PHYSICS.

For this subject ample provision has been made in the equipment of the institution. It is safe to say that, in the opportunities afforded for thorough study in it, the University already surpasses most of the institutions of the country. Its laboratory is supplied with expensive and well-selected apparatus, designed not only for illustration, but also for original research in all the leading divisions of the science. Students are directed to its use in the way of original investigation as soon as they are properly prepared to undertake such work.

II. CHEMISTRY.

The course in General Chemistry provides instruction in pure science, developing the theories and laws in order, and illustrating them by an extended suite of experiments. This course is supplemented by an important series of lectures on the applications of Chemistry to the Arts.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection witn the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy.

The course in Quantitative Chemistry includes both the volumetric and the gravimetric methods. The student will also be assisted in any special branch of the science that he may desire, and take up in detail topics which relate to pharmacy, medicine, agriculture, and other sciences in which the principles of Chemistry are applied.

III. ZOOLOGY AND COMPARATIVE ANATOMY.

The subjects of Zoology and Comparative Anatomy constitute a distinct professorship, and means have been provided for making the instruction in this subject thorough, practical, and extensive. A large amount of material, selected with special reference to its availability in teaching, has already been accumulated.

A dissecting-room, with good facilities for the study of veterinary anatomy, is also furnished, while for practical training in microscopy there have been supplied eight microscopic stands, representing all the principal modes of construction, and nineteen objectives, giving powers up to 2,500 diameters.

A Physiological Laboratory is now established, which is supplied with apparatus for the quantitative determination of several of the most important animal functions. It constitutes an important and timely addition to the means of instruction furnished by this department.

IV. HORTICULTURE AND BOTANY.

These subjects, comprising the scientfic and practical sides of the study of the vegetable kingdom, have recently been combined in a separate department, and extended and thorough instruction in them has already been begun.

V. GEOLOGY.

The University is able to present unusual advantages for the study of Geology. By act of the Legislature it has been put in possession of all the collections made by the late State Geological survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio.

VI. AGRICULTURE.

The department of Agriculture, which also includes the *diseases of animals* and their *medical and surgical treatment*, is provided for in a distinct professorship, the aim of which is to acquaint the student with the theory and practice of a truly rational system in this most important field. The course extends through two years, and is rendered practical by being constantly connected with the work that is carried on upon the farm. Numerous opportunities are afforded to the students in veterinary medicine of observing the treatment of diseased animals.

VII. MATHEMATICS.

Under the two professorships that divide the work of Mathematics between them, a full course of instruction is provided for, including also the subject of Astronomy. Two terms are given to Trigonometry, and one term is given to each of the three subjects, Analytical Geometry, the Differential, and the Integral Calculus. The work of several other departments, especially Civil Engineering, Physics, Mechanics, and Chemistry, require the constant and practical application of the knowledge acquired in mathematical study.

VIII. DRAWING AND DESIGN.

Instruction in these subjects is provided in the University, and all needful facilities are furnished by which those who wish may acquire skill in these several departments of art. The studio is well supplied with casts and drawing copies. Mechanical drawing is made a prominent element in the education of all students in Engineering.

IX. CIVIL ENGINEERING.

This course, which extends through three years, includes surveying, location and construction of roads and railroads, construction of bridges, strength of materials, geodesy, etc. The time of one professor is chiefly devoted to this department. The field-work is extensive and varied, and a full set of engineering instruments of the finest construction is provided.

X. MINING ENGINEERING.

This department is now in successful operation, and classes are established in the several branches belonging to it. The mining of coal and the manufacture and working of iron are recognized as leading subjects in it, but full courses of instruction are offered in general Metallurgy. The department is well equipped, both for instruction and practical work.

XI. MECHANICAL ENGINEERING.

The University is able to offer excellent advantages in this important subject. A Mechanical Laboratory has been established, and is in successful operation. The Russian system of hand-training has been introduced, which insures the imparting of a measure of practical skill, together with theoretical instruction.

XII. MILITARY SCIENCE AND TACTICS.

In accordance with an act of Congress, an officer of the United States army has been detailed by the War Department to give instruction in the subjects named above. An extended course of lectures and recitations in Military Science is offered to such students as desire it, while thorough training in military drill is made obligatory upon all male students, except such as are excused on reasonable grounds.

XIII. FRENCH AND GERMAN LANGUAGES.

In the organization of the University, special prominence is given to the modern languages. French and German can be pursued in courses as extensive as the needs of the student may require.

XIV. LATIN AND GREEK LANGUAGES.

Ample provision is also made for the study of the Latin and Greek languages, not only in compliance with those terms of the organic law of the University which forbid the exclusion of classical studies, and which declare one of the aims of the institution thus endowed to be "the liberal education of the industrial classes," but also because of the great advantage which such study gives in acquiring a thorough knowledge of our own and other modern languages; and because of the important relations which the classic languages bear to literary, historical, and scientific studies.

XV. PHILOSOPHY AND POLITICAL ECONOMY.

The course in Philosophy extends through the Junior and Senior years. The Junior Year is devoted to Psychology and the History of Philosophy; the Senior year to Ethics, Logic, Metaphysics, and Political Economy. All these subjects are taught by text-books. The students work up the topics by examining their own minds, by searching the best authors, and by weekly essays and discussions which are required from each student.

XVI. HISTORY AND ENGLISH.

Extended courses in both subjects are provided. Three years of work in advanced History are afforded to candidates for the degree of Bachelor of Philosophy. The last of these, a course in United States Constitutional History and Civil Polity, is included in the course for the degrees of B.A. and B.Sc.

In English Language and Literature the course extends through the last three college years. In the Sophomore year, two terms are devoted to the Art of Discourse and one term to the Study of Words. In the Junior year, English, as a classic, is taken up. Beginning in the study of the Anglo-Saxon, it includes the critical reading of texts according to the methods employed with Latin and Greek, and a historical survey of the body of our literature.

The subjects are taught both by text-books and lectures, and the student is trained as far as possible to habits of independent research.

DEGREES AND COURSES OF STUDY.

The University offers three general degrees, viz.: Bachelor of Arts (A.B.), Bachelor of Philosophy (Ph.B.), and Bachelor of Science (B.Sc.). It also offers four special degrees, viz.: Civil Engineer (C.E.), Mining Engineer (M.E.), Mechanical Engineer (Mech.Eng.), and Bachelor of Agriculture (B.Ag.)

In addition to these degrees, certificates of work done in the several departments will be granted, as hereafter stated.

The courses of study which lead to the above-named degrees can be learned from the following statements and schedules.

A Preparatory Course of two years duration is provided for those students who enter the University directly from the common or district schools. This course includes the ordinary studies of the better grade of the high schools of the State. It is expected that the graduates of these schools can sustain examination in the entire Preparatory Course, and enter directly upon proper college work.

The Preparatory Course is shown in the following schedule:

PREPARATORY COURSE.

FIRST YEAR.

First Term—Algebra, from Quadratics; Physical Geography; Latin or German.

Second Term—Algebra completed; United States History; Latin or German.

Third Term—Botany; General History; Latin or German.

Exercises in English Grammar and composition one hour each week throughout the year.

SECOND YEAR.

First Term—Geometry; Human Physiology; Latin or German.

Second Term—Geometry completed; Physics; Latin or German.

Third Term—Plane Trigonometry; Physics; Latin or German.

Exercises in Rhetoric and English Composition one hour each week throughout the year.

Either Latin or German, as named above, is to be chosen for a two years course. Students looking forward to the degree of Bachelor of Arts, or to the degree of Bachelor of Philosophy, will take Latin; candidates for other degrees will take German.

Text-Books—Algebra, *Loomis;* Geometry, *Loomis;* Trigonometry, *Loomis;* Physical Geography, *Guyot;* Human Physiology, *Huxley;* United States History, *Eliot;* General History, *Freeman;* Botany, *Wood;* Physics, *Norton.*

The text-books in Latin and German will be found under the heads of these departments on a subsequent page.

GENERAL AND TECHNICAL COURSES.

In the following schedules the studies required for the several degrees of the University are named. The character and amount of the work done in each can be further learned from the detailed statements in regard to the departments that follow the schedules. It will be observed that a considerable amount of the work is common to the several courses, and, further, that this common work is made, for the most part, synchronistic in the courses.

(A.) GENERAL COURSES.

FOR THE DEGREE OF BACHELOR OF ARTS.

Freshman Year.

First Term.	Latin, *Livy.*	Greek, *White's Lessons.*	Chemistry, *Norton.*
Second Term.	Latin, *Cicero.*	Greek, *Lessons, and Anabasis, Book I.*	Chemistry, *Norton.*
Third Term.	Latin, *Horace, Odes.*	Greek, *Anabasis, Books II and III.*	Chemistry, *Lectures*, 2. Mineralogy, *Dana*, 3.

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	Latin, *Horace, Epistles*, 3. English, *Art of Discourse, Day*, 2.	Greek, *Memorabilia, and Phaedon*, 3. Physics, *Ganot*, 3.	Botany, *Lectures*, 2. Zoology, *Packard*, 3.
Second Term.	Latin, *Tacitus, Histories*, 3 English, *Art of Discourse, Day*, 2.	Greek, *Herodotus, Selections*, 3. Physics, *Ganot*, 3.	Botany, *Lectures*, 2. Zoology, *Packard*, 3.
Third Term.	Latin, *Plautus.* English, *Study of Words, Trench*, 2.	Greek, *Homer*, 3. Physics, *Ganot*, 3.	Botany, *Lectures*, 2. Zoology, *Packard*, 3.

Junior Year.

First Term.	Psychology, *Porter*, 3. Anglo-Saxon, *March's Gram. and Reader*, 2.	Greek, *Euripides*, 3. Latin, *Catullus and Lucretius*, 2.	Geology, *Le Conte.*
Second Term.	Psychology, *Porter*, 3. Chaucer, *March's Method*, 2.	Greek, *Sophocles*, 3. Latin, *Cicero*, 2.	Geology, *Le Conte*, 3. Astronomy, 2.
Third Term.	History of Philosophy, *Schwegler*, 3. Shakespeare, *March's Method*, 2.	Greek, *Demosthenes*, 3. Latin, *Quintilian*, 2.	Geology, 2. Astronomy, *Loomis*, 3.

Senior Year.

First Term.	Ethics, *Calderwood.*	Greek, *Plato*, 3. English Literature, 2.	Constitutional History, 2. Elective course in Science for the year.
Second Term.	Logic, *Jevons*, 3. Political Economy, *Wayland-Chapin*, 2.	Greek, *Sophocles*, 3. English Literature, 2.	
Third Term.	Metaphysics, 3. Political Economy, *Wayland-Chapin*, 2.	Greek, *Aeschylus*, 3. English Literature, 2.	

FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Freshman Year.

First Term.	Latin, *Livy.*	French, *Grammar, Duffet.*	Chemistry, *Norton.*
Second Term.	Latin, *Cicero.*	French, *Masson's Classics*	Chemistry, *Norton.*
Third Term.	Latin, *Horace, Odes.*	French, *Masson's Classics*	Chemistry, *Lectures*, 2. Mineralogy, *Dana*, 3.

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	Latin, *Horace, Epistles*, 3 English, *Art of Discourse, Day*, 2.	Physics, *Ganot*, 3. French, *Moliere*, 2.	Botany, *Lectures*, 2. Zoology, *Packard*, 3.
Second Term.	Latin, *Tacitus*, 3. English, *Art of Discourse, Day*, 2.	Physics, *Ganot*, 3. French, *Corneille*, 2.	Botany, *Lectures*, 2. Zoology, *Packard*, 3.
Third Term.	Latin, *Plautus*, 3. English, *Study of Words, Trench*, 2.	Physics, *Ganot*, 3. French, *Feuillet*, 2.	Botany, *Lectures*, 2. Zoology, 3.

Junior Year.

First Term.	Psychology, *Porter*, 3. Anglo-Saxon, *March's Gram. and Reader*, 2.	History, 3. Latin, *Lucretius*, 2.	Geology, *LeConte.*
Second Term.	Psychology, *Porter*, 3. Chaucer, *March's Method*, 2.	History, 3. Latin, *Cicero*, 2.	Geology, *LeConte*, 5. Astronomy, *Loomis*, 2.
Third Term.	History of Philosophy, *Schwegler*, 3. Shakespeare, *March's Method*, 2.	History, 3. Latin, *Quintilian*, 2.	Geology, 2. Astronomy, 3.

Senior Year.

First Term.	Ethics, *Calderwood.*	History, 2. English Literature, 3.	Constitutional History, 2.
Second Term.	Logic, *Jevons.* Political Economy, *Wayland-Chapin.*	History, 2. English Literature, 3.	Elective course in Science for the year.
Third Term.	Metaphysics. Political Economy, *Wayland-Chapin.*	History, 2. English Literature, 3.	

FOR THE DEGREE OF BACHELOR OF SCIENCE.

Freshman Year.

First Term.	Spherical and Analytical Trigonometry.	French, *Duffet.*	Chemistry, *Norton.*
Second Term.	Higher Algebra.	French, *Masson's Classics*	Chemistry, *Norton.*
Third Term.	Land Surveying. Use of Instruments.	French, *Masson's Classics*	Chemistry, *Lectures*, 2. Mineralogy, *Dana*, 3.

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	Elective course in Botany, Chemistry, Physics, or Mathematics, for the year.	French, *Moliere*, 2.	Botany, *Lectures*, 2.
		Physics, *Ganot*, 3.	Zoology, *Packard*, 3.
Second Term.	English, for the year; First and Second Terms, *Art of Discourse, Day*, 2; Third Term, *Study of Words, Trench*, 2.	French, *Corneille*, 2.	Botany, *Lectures*, 2.
		Physics, *Ganot*, 3.	Zoology, *Packard*, 3.
Third Term.		French, *Racine*, 2.	Botany, *Lectures*, 2.
		Physics, *Ganot*, 3.	Zoology, *Packard*, 3.

Junior Year.

First Term.	Elective course in Botany, Chemistry, or Physics for the year.	Elective course from sciences already given, with addition of Anatomy and Physiology.	Geology, *Le Conte.*
Second Term.			Geology, *Le Conte*, 3.
			Astronomy, *Loomis*, 2.
Third Term.			Geology, 2.
			Astronomy, *Loomis*, 3.

Senior Year.

First Term.	Elective course from Science, or from Ethics, Logic, and Political Economy.	Elective course from list of sciences given above, with the addition of Geology.	Psychology, *Porter*, 3.
			Constitut'l History, 2.
Second Term.			Psychology, *Porter*, 3.
			Constitut'l History, 2.
Third Term.			History of Philosophy, *Schwegler*, 3.
			Constitut'l History, 2.

It will be observed that at the beginning of the Sophomore Year of the Bachelor of Science course an advanced course in science is to be selected from such branches as have been already studied in their elementary forms in either the Freshman Year or in the Preparatory Course. The choice at this time is therefore confined to the four following, viz.: Botany, Chemistry, Physics, and Mathematics.

At the beginning of the Junior Year the list of electives is extended by the addition of Vertebrate Anatomy and Physiology, and at the beginning of the Senior Year by the addition of Paleontology, and also of Philosophy and Ethics.

In the Senior Year of the courses for the degrees of Bachelor of Arts and Bachelor of Philosophy, there is also an election. The student can choose from any of the sciences, the elements of which have been previously given.

Rhetorical exercises are required of students in all the above-named courses throughout the Sophomore, Junior, and Senior Years.

(B). TECHNICAL COURSES.

The courses for the special degrees of Civil Engineer, Mining Engineer, and Mechanical Engineer, *agree with the course for the degree of* BACHELOR OF SCIENCE *for the Freshman Year*. They also have several studies in common with all the courses already named, as will be seen by the schedules. The course for the degree of Bachelor of Agriculture differs to a considerable extent from the courses previously described.

FOR THE DEGREE OF CIVIL ENGINEER.

Sophomore Year.

First Term.	Surveying with Field Practice. Platting and Lettering.	French, *Moliere*, 2. Physics, *Ganot*, 3.	Analytical Geometry.
Second Term.	Descriptive Geometry, 3. Astronomy, 2.	French, *Corneille*, 2. Physics, *Ganot*, 3.	Differential Calculus.
Third Term.	Descriptive Geometry, 2. Astronomy, 3	French, *Racine*, 2. Physics, *Ganot*, 3.	Integral Calculus.

Junior Year.

First Term.	Mahan's Civil Engineering.	Geology.	Analytical Mechanics.
Second Term.	Bridge Strains—Graphic Process.	Geology.	Maps, Shading, Tinting, etc.
Third Term.	Girder Bridges, Walls, Arches, etc.	Geology (Economic).	Drawing for Engineering Structures.

Senior Year.

First Term.	Railroad Field Work. Henck's Field Book.	Physics.	Strength of Materials. Hydraulics.
Second Term.	Drawing—Shadows and Perspective.	Physics.	Assaying.
Third Term.	Higher Geodesy.	Physics.	Plans, etc.

FOR THE DEGREE OF MINING ENGINEER.

Sophomore Year.

First Term.	Physics, 3. Projection Drawing, 2.	Analytical Geometry.	Analytical Chemistry.
Second Term.	Physics, 3. Descriptive Geometry, 2.	Differential Calculus.	Analytical Chemistry.
Third Term.	Physics, 3. Projection Drawing, 2.	Integral Calculus.	Analytical Chemistry.

Junior Year.

First Term.	Geology.	Metallurgy.	Analytical Chemistry.
Second Term.	Geology.	Metallurgy.	Analytical Chemistry.
Third Term.	Geology (Economic).	Metallurgy.	Analytical Chemistry.

Senior Year.

First Term.	Assaying.	Analytical Mechanics.	Strength of Materials.
Second Term.	Mining Engineering.	Plans, Specifications, and Estimates for Metallurgical Works.	Blow-pipe Analysis.
Third Term.	Coal Washing and Mechanical Treatment of Ores	Plans, Specifications, etc.	Determinative Mineralogy.

FOR THE DEGREE OF MECHANICAL ENGINEER.

Sophomore Year.

First Term.	Analytical Geometry.	French, 2. Physics, *Ganot*, 3.	Mechanical Laboratory, 3. Projection Drawing, 2.
Second Term.	Differential Calculus.	French, 2 Physics, *Ganot*, 3.	Mechanical Laboratory, 3. Descriptive Geometry, 2.
Third Term.	Integral Calculus.	French, 2. Physics, *Ganot*, 3.	Mechanical Laboratory, 3. Projection Drawing, 2.

Junior Year.

First Term.	Geology.	Metallurgy.	Analytical Mechanics.
Second Term.	Geology, 3. Astronomy, 2.	Metallurgy.	Mechanism.
Third Term.	Geology, 2. Astronomy, 3.	Mechanical Laboratory. Designing.	Mechanism.

Senior Year.

First Term.	Thermo-Dynamics. Pneumatics.	Physics.	Strength of Materials. Hydraulics.
Second Term.	Prime Movers.	Physics.	Technical Drawing.
Third Term.	Mill-work.	Physics.	Machine Designing and Drawing.

FOR THE DEGREE OF BACHELOR OF AGRICULTURE.

Freshman Year.

First Term.	Spherical and Analytical Trigonometry.	Mechanical Laboratory.	Chemistry.
Second Term.	Higher Algebra.	Mechanical Laboratory	Chemistry.
Third Term.	Land Surveying. Use of Instruments.	Mechanical Laboratory.	Chemistry, 2. Mineralogy, 3.

Sophomore Year.

First Term.	Economic Botany.	Zoology, 3. Cryp. Botany, 2.	Agricultural Chemistry.
Second Term.	Physiological Botany.	Zoology, 3. Cryp. Botany, 2.	Agricultural Chemistry.
Third Term.	Special Botany. Grasses, etc.	Zoology, 3. Cryp. Botany, 2.	Agricultural Chemistry.

Junior Year.

First Term.	Horticulture. (General Principles.) (Fruit Culture.)	Geology.	Anatomy and Physiology.
Second Term.	Horticulture. (Vegetable Gardening and Seed Growing.) (Arboriculture and Practical Forestry.)	Geology.	Anatomy and Physiology
Third Term.	Horticulture. (Landscape Garden'g.) (Pract'l Horticulture.)	Geology (Economic.)	Anatomy and Physiology.

Senior Year.

First Term.	Soils, Manures, etc.	Domestic Animals—Varieties, etc.	Diseases of Animals.
Second Term.	Farm Crops and Tillage.	Breeding and Feeding Stock.	Principles of Treatment.
Third Term.	Farm Improvement and Management.	Dairying. Wool Growing, etc.	Particular Diseases.

The range of instruction in the several subjects named in the preceding schedules is more particularly defined in the following statements of the work provided in the different departments of the University:

DEPARTMENTS AND RANGE OF INSTRUCTION.

MATHEMATICS.

The preparatory department includes Algebra, Geometry, and Plane Trigonometry. In the Freshman Year the subjects of Spherical and Analytical Trigonometry, Higher Algebra, and Land Surveying are taken up.

In the Engineering courses, Analytical Geometry, Differential Calculus, and Integral Calculus are required in the Sophomore year. They are elective studies in the same year of the Bachelor of Science course.

CIVIL ENGINEERING.

The order of studies in this department can be learned from the schedule which exhibits the course required for the degree of civil engineer.

Text-Books.—The works of Loomis on Algebra, Geometry, and Astronomy. In parts of the course, works by Davies, Warren, Church, Gillespie, Mahan, Haupt, Worthen, and others.

In addition to the use and study of the text-books, the students are taught and practiced in the use of various astronomical and engineering instruments—the level, the transit, the plane-table, the sextant, the globes. They have practical field-work throughout the year, except when the inclemency of the weather does not admit of it. The work consists in taking differences of level, running lines, measuring horizontal and vertical angles, determining the variation of the magnetic needle, finding the latitude of the pole star and by meridian altitudes of the sun; in fine, every variety of appropriate work which can be executed, is regularly, systematically, and thoroughly done.

PHYSICS.

The instruction in Physics comprises three grades of work.

In the Preparatory Course, the elements or general principles of Physics are taught during the second and third terms. The work consists, in the main, of a daily

recitation, for which lectures by the instructor are occasionally substituted. This course is strictly elementary in its character, and is fully illustrated by experiments throughout.

During the Sophomore year all regular students, except candidates for the degree of Bachelor of Agriculture, have a recitation in Physics on three days of each week. In this course a text-book is used, and the work consists of recitations and lectures combined. Application is here made of the student's knowledge of mathematics to the more advanced portions of Physics. The formulae representing the more important physical laws are developed, and experiment is made use of whenever necessary to the elucidation of the subject.

In addition to the above, students in Civil or in Mechanical Engineering are required to give the equivalent of one daily recitation throughout one year to Higher Physics. Candidates for the degrees of Bachelor of Arts and Bachelor of Philosophy may elect the same for one year, and candidates for the degree of Bachelor of Science for one, two, or three years. The work in this course consists largely of laboratory practice. Lectures are given regularly to the whole class upon subjects of general interest, such as Making and Reducing Observations and their discussion, including the method of Least Squares. Text-books are used and lectures given upon special subjects of study. The attempt is made to make all students familiar with methods of original research, and as far as possible every student is required to do something in the way of original investigation. Before beginning this grade of work students should have completed the course in Pure Mathematics.

FIRST YEAR.

First Term—Graphics and Mathematics applied, four-fifths; Experiments, one-fifth.

Second Term—Physical Laboratory: Acoustics and Optics.

Third Term—Physical Laboratory: Heat.

SECOND YEAR.

First Term—Physical Laboratory: Heat.

Second Term—Physical Laboratory: Heat and Electricity.

Third Term—Physical Laboratory: Electricity and Magnetism.

In the five terms last named, the student uses the instruments of the laboratory in reviewing the work of others, or in original research. There are also combined with this, lectures on proper manipulation and care in keeping notes as conducive to trustworthy results; also, the theory of errors as regards instruments, reduction of observations, etc. The student is enabled to pursue his experiments thoroughly and extensively by means of the apparatus of the department, which includes many rare and valuable instruments.

Works of Reference, accessible to the Student.— Atkinson's Ganot's Physics, Deschanel's Physics, Kohlrausch's Physical Measurements, Pickering's Physical Manipulations, Stewart's Heat, Jamin's Physique, Clark and Sabine's Electrical Tables and Formulæ, Higg's Electric Lighting, Schwendler's Electric Testing.

STATE METEOROLOGICAL BUREAU.

The Legislature, at its last session, established a State Meteorological Bureau. The Professor of Physics is the Director of the Bureau. There is provided at the State University a full equipment of standard instruments for meteorological observations. Corresponding equipments are also provided for voluntary observers throughout the State—one in each Congressional District.

MECHANICAL ENGINEERING.

This course is intended for those who desire to prepare themselves either for the profession of Mechanical Engineering, for superintending the construction of machinery, or for managing machinery in manufacturing establishments. In it instruction in Principles is combined with practice. The former is mostly given by lectures, while the latter is confined to the Mechanical Laboratory.

The course includes the following special studies, all of which must be passed before taking the degree:

MECHANISM AND DRAWING—ONE YEAR.

Principles of Mechanism.
Machine Designing and Drawing.
Machine Drawing.

PRIME MOVERS AND MACHINERY—ONE YEAR.

Thermodynamics and Transmission of Fluids.
Prime movers.
Machinery and Mill-work.
Besides the above there will be required, for graduating:
Three terms of Elementary Laboratory Practice
One term of Machine Construction in Laboratory.
One term of Strength of Materials and Hydraulics.

EXPLANATION OF THE COURSE.

In the Principles of Mechanism are studied the parts of machinery by pairs; or, elementary combinations of mechanism. In this the form and arrangement of the parts necessary for securing the desired modification of motion is sought.

In the Machine Designing the student takes up some problem in the shape of a particular machine for a special purpose. The forms, dimensions and arrangements of the parts are decided upon, and then a drawing is carefully made of the whole. Detail drawings to regulation size are then made, and finished in shade lines, as is done in the best shops. The quality of these drawings is sufficient for the requirements of photo-engraving for illustrations upon circulars.

In Thermodynamics are studied the principles which form the groundwork of all heat engines.

In Prime Movers are studied all kinds of heat engines, such as steam engines, hot-air engines, etc., and also wind-wheels and water-wheels.

Mill-work and machinery takes up valve-gears, fly-wheels, governors, efficiency of parts of machines, strength of parts, etc.

The Mechanical Laboratory is intended for acquainting the student with the materials used in machine construction; with the forms customary in machinery; to impart a degree of skill in the use of tools, and a knowledge of the operations and practices of shops. The student uses most of the ordinary tools of the machine-shop, such as the vise, hand-lathe, drilling-machine, engine lathe, milling and shaping-machine and planer; also, the forge and anvil, the iron cupola and brass furnace and pattern-makers' tools.

The first terms' work consists of the actual use of tools in executing a set of forms chosen, with a view to supplying the greatest possible amount of practical instruction for the time. This is combined with weekly lectures on tools and their use.

The second term carries the above practice to the fitting together of parts. This is combined with weekly exercises in designing and drawing of machine elements, such as cranks, bearing-boxes, stub-ends, etc.

The third term is fully occupied in fitting parts carefully together, as in the joints of machinery, and in finishing the surfaces by scraping, polishing, burnishing, etc. This is in combination with a weekly exercise in the invention of simple machines for specific operations, such as bending wire staples, cutting wooden combs, etc.

The fourth term of Mechanical Laboratory practice is constructive. It is taken in connection with the principles of mechanism. In the latter, problems in mechanism are worked out, forms and dimensions assigned to the parts, and then these are executed in the Laboratory, resulting in models of mechanical movements for the cabinet.

Projects will be assigned to the student, from time to time, on topics connected with his studies, requiring him to take indicator cards, test the efficiency of boilers, visiting manufacturing establishments, etc., and report. Such reports are neatly made out on the regulation papers of the Department. These are taken, in part, for the examinations, and retained for the cabinet.

Text-Books and Works of Reference.—Rankine's Steam Engine, and Machinery and Mill-work; Weisbach's Mechanics; Willis's Principles of Mechanism; Belanger's Cinematique; Zenner's Traite de la Chaleur; Neville's Hydraulics; Clausius and McCulloch on Heat; Sellers's Manual of Machine Tools; Shelley's Workshop; Unwin's Elements of Machine Design; Nicholson on Files and Filing.

DRAWING AND DESIGN.

In Mechanical Drawing instruction is given in Elementary Projection Drawing, and to any special student who may desire it, advanced Mechanical Drawing, such as Architectural or other Constructive Drawing.

In Free-Hand Drawing, instruction is given in Elementary Drawing, Outline Drawing from the flat copy and from models, and in Shading from models and casts Water-colors Painting from copies, and groups of objects, Oil Painting from the copy

and groups in still-life, Crayon Portraits from copy or photograph, and Modeling in clay, are also taught.

CHEMISTRY.*

All students who wish to obtain a degree are required to study Chemistry for two and two-fifths terms. During this time General Chemistry, together with its most important applications to the arts, is taught by the use of text-books and of lectures, illustrated, by an ever-growing collection of the materials used in manufactures, and by a very complete suite of experiments.

After the completion of this elementary course, those who desire to devote special attention to Chemistry enter the analytical laboratory, where they can carry on their work for two years or more. This laboratory work is *required* only of students in Mining. Any other student may enter the laboratory if his time and his strength permit.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy. He is also employed in making various compounds, and, if his time permit, studies exhaustively one or more of the elements and the important compounds thereof.

The course of Quantitative Chemistry includes both the gravimetric and volumetric methods. The analyses are at first confined to those compounds whose structure is known, and afterwards extended to such bodies as the student may require in the special branch of the science to which he desires to devote himself. Opportunity is offered for the study of coals, ores, minerals, fertilizers, soils, or of the useful and the waste products in manufactures.

If the student desire, he will also be assisted in taking up in detail topics which relate to Agriculture, to Pharmacy, to Medicine, and to other sciences, or to arts in which the principles of chemistry are applied. A full course of assaying is given in the Mining Laboratory, which is also open to students of chemistry.

A summary of the course is given below.

REQUIRED OF ALL CANDIDATES FOR GRADUATION.

GENERAL CHEMISTRY—TWO AND TWO-FIFTHS TERMS.

Inorganic and Organic Chemistry, and the applications of Chemistry to the Arts.

SPECIAL COURSE.

FIRST YEAR.

First Term—Qualitative Analysis: Exercises in Blow-pipe and Flame Reactions, Reactions in the dry way, Reactions of Single Bases and Acids.

*For description of new laboratories of departments of Chemistry and Mining and Metallurgy, see President's report.

Second Term—Qualitative Analysis continued: Determination of Mixtures, Blow-pipe Mineralogy, Preparation of Compounds.

Third Term—Quantitative Analysis, Stoichiometry, Review of General Chemistry throughout the year.

SECOND YEAR.

Quantitative Analysis: Special studies in Chemistry applied to Pharmacy, to Agriculture, to Manufactures, and to the Arts.

Text-Books.—Norton's Chemistry, Fowne's Chemistry, Beilstein's Manual, Galloway's Qualitative Chemistry, Will's Analytical Chemistry, Classen's Quantitative Chemistry, Fresenius's Quantitative Chemistry, Caldwell's Agricultural Chemistry.

Books of Reference.—Watt's Dictionary of Chemistry, Handwœrterbuch der Chemie, Gmelin's Hand-Book of Chemistry, Wagner's Chemical Technology, Graham-Otto's Chemie, Rose's Analytischen Chemie, Hoppe-Seyler and Gorup-Besanez's Physiologischen Chemie, Elderhorst's Determinative Mineralogy.

MINING AND METALLURGY.

The course in Mining Engineering secures to the student careful instruction, with ample allowance of time, in the three fundamental branches of the art—mining, preparation of the ore, and its metallurgical treatment. These courses will comprise lectures, the study of text-books, preparation of maps, drawings, and sections, and visits to existing works, with careful reports upon them, and practice in estimates and designs.

For Assaying, there is a full equipment of furnaces and ores for the dry assay, and the wet methods are taught in the chemical laboratory.

An ample collection of minerals is provided, comprising all species with which the Mining Engineer should be familiar, and to this the students have constant and familiar access.

Crystallography is taught by the aid of a complete collection of large wood models, made especially for the department, and containing every common form.

Text-Books and Books of Reference.—Dana's Mineralogy, Egleston's Crystallographic Tables, Callon's Mining, Andre's Mining and Mining Machinery, Phillips's Metallurgy, Egleston's Metallurgical Tables, Rittenger's Aufbereitung, Gætschmann's Aufbereitung, Bodemann & Kerl's Assaying, Mitchell's Assaying, Von Cotta's Ore Deposits.

GEOLOGY AND PALEONTOLOGY.

In the preparatory course one term is given to Physical Geography. In all of the college courses General Geology is required in the first two terms of the Junior year, and Economic Geology in the third term.

Le Conte's *Elements of Geology* is made the basis of the instruction in the general course; Economic Geology is taught by lectures.

Students desiring to pursue Geology further can elect it as one of their studies throughout the Senior year. In this year, particular attention will be given to the Geology and Paleontology of Ohio, for the illustration of which subjects the museum

affords ample materials. These subjects will be taught by lectures, by practical work in the museum, and as far as possible by field practice.

Text-Books and Works of Reference.—Le Conte's Elements of Geology, Dana's Manual of Geology, Lyell's Principles of Geology, Nicholson's Manual of Paleontology, Geological Reports of Ohio and of other States.

AGRICULTURE AND VETERINARY SCIENCE.

There are three years of work provided for the student in the department of Agriculture. In the first year, Soils are made a subject of examination, their geological relations and origin are explained, their composition is shown, and how it is determined; the special adaptations of soils to particular crops and modes of culture are shown, and how to increase or restore exhausted fertility; the management of pastures and meadows; the character and value of the different grasses, clovers and other forage plants; the culture of field crops, such as corn, wheat, oats, barley, rye, potatoes, etc.; also the value and application of animal manures, marl, gypsum, wood-ashes, lime, superphosphate, guano, and city sewage.

The work named above occupies the first and second terms. During the remainder of the year the following subjects are treated: Work of the farm, and improvements; Drainage, draining tools, and the manufacture of drain-tiles; Irrigation, its value and methods; Farm Roads, and how to make them; Fences, material, construction, and cost; Rural Architecture, applied to the erection of farm-houses, barns, stables, etc.; Farm Machinery.

The second year is mainly spent on the following topics: The natural history, description and adaptation of the various domestic animals—horse-training, cattle feeding, dairy management, wool-growing, etc.

The work of the third year is spent on the general subject of Veterinary Science. The range of instruction can be learned from the topics named below: General principles, Causes, Symptoms, Elements of Disease; Classification of Diseases, Principles of Treatment, and Remedial Agents; Particular Diseases and Operations. These are carefully studied, and, so far as opportunity can be obtained, diseases are treated, and operations made, under the inspection of the class.

DEPARTMENT OF HORTICULTURE AND BOTANY.

The instruction in Botany begins with the first year of the Preparatory Course, one term of which is devoted to Structural and Systematic Botany. Further instruction is given in each of the following subjects: Economic Botany, Vegetable Physiology, Vegetable Histology, Gramineæ, Compositæ, and other special groups, Ferns and Fungi. Their arrangement, as regards the collegiate terms and years, is seen in the tabulated statement of the different courses of study.

The instruction is given by lectures in connection with Laboratory practice, supplemented by field-work or class excursions.

The practical bearings of the Science are made prominent in all the instruction given. In Fungi, special study is made of those forms producing rust, mildew, blight, etc., which prove so destructive to cultivated plants.

In Economic Botany, besides a study of the special characteristics, geographical distribution, and distinctive properties of all the prominent natural orders, the history, uses, and importance of the different economic species, included in their orders, are fully considered.

The study of Horticulture comprises lectures and recitations in the class-room, supplemented by observations and practice in the gardens and orchards. It is treated as an art based on science. The instruction continues throughout the year. The first term is devoted to a study of the General Principles of Horticulture and Fruit culture. Under the first general subject the following are among the topics considered: Horticulture, as a profession, its relation to science; location for Horticultural work; implements, fertilizers, draining and irrigation, weeds and insects, management of help, marketing, etc.

The course in Fruit Culture embraces a study of the origin, history, methods of propagation, pruning and training, harvesting and marketing, insect enemies, diseases and varieties of both the small and large fruits.

In Arboriculture and Forestry, special attention is given to the influence of forests upon climate, the value of trees for timber and ornament, the best methods of culture, and a history of different varieties.

The instruction in Vegetable Culture includes kitchen and market gardening and seed-growing. Among the subjects considered are: location of the garden, laying out ground, draining, special preparation of soil, irrigation, management of composts, commercial fertilizers, implements, selection of seed, construction and management of green-houses, hot-beds, cold-frames; special garden crops, history, cultivation and varieties of each; growing seeds for home use and for market, the family kitchen garden, etc. In connection with the lectures, experiments, such as testing the vitality and germinating power of different seeds, are conducted in the Laboratory.

The third term is devoted to Practical Floriculture and Landscape Gardening. The general subject is divided into the following topics: window-gardening, genera, management of house-plants, hanging-baskets, climbing vines, flowering bulbs, ferneries, Wardian cases, etc.; out-door flower-gardening, commercial flower-gardening, lawns, walks and drives, ornamental shrubs and trees. Flower-beds in the borders, and a considerable collection of ornamental shrubs and trees on the college grounds afford valuable means of illustration in the study of the above subjects.

AGRICULTURAL EXPERIMENT STATION.

The State has established an Agricultural Experiment Station, which is now located at the University. The Station is sustained by appropriations from the State.

The experiments and investigations will be carried on both in the field and in the laboratory, and will deal with the following great Agricultural interests, viz.: (1). Grain Raising. (2). Stock Farming and Dairy Husbandry. (3). Fruit and Vegetable Culture. (4). Forestry.

The Station is prepared to test varieties; to analyze and test fertilizers and manures; to examine seeds that are suspected of being unsound or adulterated; to identify and name weeds and other plants; to investigate, and describe when known,

the habits of injurious and beneficial insects; and other work of a similar character that properly comes within its province.

The Professor of Horticulture and Botany is the Director of the Agricultural Experiment Station.

ZOÖLOGY AND COMPARATIVE ANATOMY.

The work of this department comprises the study of animal life, alike from the anatomical and the physiological aspect. Preparatory students receive, during the first term of their second year, instruction in this department in the elements of human anatomy and physiology. It is the object of this instruction to impart to these students such general knowledge of the structure and functions of their own bodies as will serve as a guide to their maintenance in a state of health and usefulness. Huxley's Lessons in Elementary Physiology is used as a text-book, accompanied by lectures and by anatomical and histological demonstrations.

All students who are candidates for bachelors' degrees receive instruction in Zoölogy during their Sophomore Year in this department. This instruction will be by lectures, with collateral reading, demonstrations, and such laboratory exercises as the size of the classes from year to year will permit, and will have for its object to impart to the student a clear conception of the animal kingdom as a whole rather than a mere technical familiarity with one of its lesser divisions, to illustrate the objects and methods of classification, to indicate the more important of those morphological relations on which all intelligent classification is based, and to give some insight into those principles which underlie all the phenomena of animal life. All the classes of the animal kingdom (as well as the orders of the more important classes) will receive consideration, but the larger proportion of the student's attention will be directed to the classes and order of the Invertebrata, partly because they include those forms least likely otherwise to come under their observation, and partly because of the larger amount of work done upon the Vertebrata in the advanced work of the department.

At the beginning of the Junior Year students who are candidates for the degree of Bachelor of Science have open to their election the advanced work of this department. The first year of this work is devoted mainly to the study of Physiology, with its necessary accompaniments of Histology and Physiological Anatomy, in the following manner:

The student begins the consideration of any function, or group of functions, by a careful dissection of the organs involved in one or more of the domestic animals. The dissecting-room is convenient and well-lighted, and is well supplied with the necessary material and appliances. While the human body is never dissected here, students looking to the medical profession can here acquire a knowledge of practical anatomy and an amount of experience that will prove of great service in the future.

The Histology of the parts involved follows, then anatomy. The student is here not only furnished with suitable preparations for study, but also taught to harden material, to cut, stain, and mount sections for himself, and to perform all the histological manipulations. The laboratory is supplied with microscopes, microtomes, etc., and with all necessary reagents, and offers special facilities in this direction.

The form, structure, and relations of the organs involved having been duly ex-

amined, the student now proceeds to the dissection of the function in question. The Physiological Laboratory is provided with facilities for practical work in chemical physiology, such work being supplemented by reading and lectures. Provision having not yet been made for the practical study of the physics and mechanics of the body, instruction is given in these cases by reading and lectures only.

It is, of course, not practicable to discuss in this manner all the functions of the animal body in a single year. Such a selection will be made each year as will best illustrate the methods and progress of physiological research, and will, all things considered, be most profitable for the students then in the laboratory.

This year's work is open to all students (other than those indicated), who have completed the required Physics, Chemistry, Physiology and Zoology of the preparatory and college classes. It is required of Juniors in Agriculture.

The second year's work, open to all who have completed the work of the first year, deals with the phenomena of animal life from the morphological rather than the physiological side. The organization, classification and distribution of animals, the principles of comparative anatomy, the phenomena of embryology and their significance will here receive attention.

While the work of this year will be arranged largely with reference to the requirements and aptitudes of each student, the following general plan will be followed: Each student will be required to study as thoroughly as the time and the facilities afforded by the department will permit, the Zoology of one of the lower divisions of the Invertebrata, the morphology of one or more classes from one of the higher divisions, and the comparative anatomy of at least one group of organs in the Vertebrata.

In addition to numerous works of reference accessible to students, the following hand-books are required to be provided: for the first year's work, Mivart's Lessons in Anatomy, Prudden's Practical Histology, and Sanderson's Syllabus of Lectures on Physiology (2d edition); Frey's Compendium of Histology, and Foster's Text-book of Physiology are recommended in addition; for the second year's work, Gegenbaur's Comparative Anatomy, and Huxley's Anatomy of Invertebrates.

HISTORY AND ENGLISH.

HISTORY.

Elementary instruction in United States and General History is afforded in the preparatory course. Three courses of Advanced History are provided for students seeking the degree of Bachelor of Philosophy. The third of these, a course in United States Constitutional History, is also required of candidates for the degrees of B.A. and B.Sc.

The arrangement of the work is as follows:

PREPARATORY COURSE.

First Year.

Second Term—United States History (Eliot).
Third Term—General History (Freeman).

COLLEGE COURSE.

Junior Year of Course for the Degree of Ph.B.

The Middle Ages; text-book, Hallam. Lectures. Three hours per week for a half year.

Modern History to 1815 as seen in the Conflict of Liberty and Absolutism; text-book and lectures. Three hours per week for a half year.

Senior Year of the same Course.

History of the English Constitution; text-book and lectures. Two hours per week for a half year.

The History of the XIX Century and present condition of the Great Powers; text-book and lectures. Two hours per week for a half year.

Senior Year of the Course for the Degrees of B.A., Ph.B., and B.Sc.

United States Constitutional History and Civil Polity; by lectures and theses. Two hours per week throughout the year.

Text-books and works of reference.—The histories by Hallum, Sheppard, Sismondi, Gibbon, Martin, Von Sybel, Thiers, Alison, Motley, Dunham, Von Raumer, Von Ranke, Gervinus, Savigny, Bryce, Green, Freeman, Hume, Macauley, Turner, Stubbs, May, Seeley, Arndt, Adams, Mackenzie, Freeman's Historical Geography of Europe, etc., etc.

Works of reference in Constitutional History of the United States.—Curtis's History of the Constitution; Von Holst's Constitutional History of the United States; Frothingham's Rise of the Republic; the Federalist; the works of Adams, Hamilton, Jefferson, Madison, Webster, Elliott's Debates, Benton's Thirty Years' View, the Annals of Congress, Benton's Abridgement of the Debates of Congress, etc.

ENGLISH.

The work in English runs through three years in the courses for B.A. and B.Ph. The following progressive course is provided:

Sophomore Year.

First Term—Art of Discourse, *Day.*
Second Term—Art of Discourse, *Day.*
Third Term—Study of Words, *Trench.*

This English of the Sophomore year is likewise required in the course for the degree of Bachelor of Science.

Junior Year.

First Term—Anglo-Saxon (March's Grammar and Reader).
Second Term—Chaucer (Clarendon Press edition of Prologue, Knight's Tale, etc).
Third Term—Shakespeare (Julius Cæsar, and Macbeth).

Senior Year.

First Term— Hale's Longer English Poems.
Second Term—A History of English Literature.
Third Term—A History of English Literature (including American authors).

The class-room work in English occupies two hours per week in each of the years named. Lectures, historical and critical, on language and literature run parallel to the course prescribed.

Books for Reference.—Maetzner's Englische Grammatik; Earl's Philology of the English Tongue; Marsh's Lectures on Origin and History of the English Language; Marsh's Lectures on the English Language and Literature; Taine's and Craik's Histories of English Literature; Morris's English Accidence; Grein's Angelsächsische Bibliothek, etc., etc.

GERMAN AND FRENCH.

A two years course in each of the two languages is provided for. In the beginning of either course the student attends mainly to grammatical doctrine and literal versions, and afterward to the literary contents and characteristics of what he reads. Lectures upon the respective literatures run through the second year of the course.

GERMAN.

First Year.

First and Second Terms—Cook's Otto's German Grammar.
Third Term—Schiller's Der Neffe als Onkel—Composition.

Second Year.

First Term—Schiller's Maria Stuart; Composition.
Second Term—Lessing's Nathan der Weise; Literature.
Third Term—Goethe's Iphigenie; Literature.

FRENCH.

First Year.

First Term—Duffet: French Grammar and Exercises.
Second Term—Grammar continued; Masson's French Classics, vol. 5.
Third Term—French Classics continued.

Second Year.

First Term—Moliere: Le Misanthrope.
Second Term—Corneille: Cinna; Literature.
Third Term—Racine: Athalie; Composition.

LATIN.

The course of study in Latin extends through five years, and is arranged as follows:

PREPARATORY LATIN.

First Year.

First Term—Latin Lessons; Allen and Greenough's Latin Grammar.
Second Term—Lessons; Caesar, *De Bello Gallico.*
Third Term—Caesar continued; Roman Antiquities.

Second Year.

First Term—Cicero, *In Catilinam.*
Second Term—Cicero continued; Virgil's Æneid begun.
Third Term—Virgil continued.

COLLEGE COURSE.

Freshman Year.

First Term—Livy, Books I and XXII; Roman History.
Second Term—Cicero, *Epistolae;* Roman History.
Third Term—Horace, *Odes;* Latin Prose Composition.

Sophomore Year.

First Term—Horace, Epistles; Latin Etymology.
Second Term—Tacitus, Histories; Roman History.
Third Term—Plautus, *Trimunus;* Roman Antiquities.

Junior Year.

First Term—Catullus and Lucretius, Selections; Latin Literature.
Second Term—Cicero, Tusculan Disputations; Roman Law.
Third Term—Quintilian, Book X; Latin Literature.

During the college course instruction will be given by text-books, or lectures, in Roman Antiquities and History, in the Latin Language and Literature, and in Roman Law.

The requirements in Latin for admission to college embrace Latin Grammar and Composition, three books of Cæsar, five orations of Cicero, and five books of Virgil.

GREEK.

The course of Greek comprises four years of college work, arranged as follows:

Freshman Year.

First Term—Goodwin's Grammar, and White's Lessons.
Second Term—Grammar and Lessons; Xenophon, *Anabasis,* Book I.
Third Term—*Anabasis,* Books I and II. Greek History.

Sophomore Year.

First Term—Xenophon *Memorabilia;* Greek History.
Second Term—Herodotus, Selections; Greek Antiquities.
Third Term—Homer, *Odyssey;* Greek Literature.

Junior Year.

First Term—Thucydides; Greek Prose Composition.
Second Term—Euripides, *Medea;* Greek Literature.
Third Term—Demosthenes, *Olynthiacs;* Greek History.

Senior Year.

First Term—Plato; Greek Etymology.
Second Term—Sophocles, *Oedipus Tyrannus;* Lyric Poets.
Third Term—Aeschylus, *Prometheus.*

PHILOSOPHY AND POLITICAL ECONOMY.

The course in Philosophy extends through the Junior and Senior years. The Junior Year is devoted to Psychology and the History of Philosophy; the Senior year to Ethics, Logic, Metaphysics, and Political Economy. All these subjects are taught by text-books. The students work up the topics by examining their own minds, by searching the best authors, and by weekly essays and discussions which are required from each student.

PROVISIONS FOR SPECIAL STUDENTS.

To students entering the University for the purpose of taking some special study, and who do not propose to complete a regular course, *full freedom in the selection of the branches which they will pursue is granted, subject only to the necessary limitation that they are prepared to take up with advantage the studies which they select.* They will enter the classes organized for the regular courses, and they can not be allowed to impair the quality of work done in the classes through their own inadequate preparation. Advanced students will find every facility for special work. The preliminary examinations are required of special students.

PROVISION FOR INSTRUCTION IN AGRICULTURE.

The University recognizes its obligations, imposed in the terms of the grant on which it is founded, to the great industrial interest of agriculture. This obligation it aims to meet in various ways. It fixes its standard of admision so that students may enter its classes from the common schools. It provides for thorough instruction in the branches of science on which Agriculture depends. It has established a professorship of theoretical and applied Agriculture. It has established a professorship of Horticulture and Botany. It has laid down a special course leading to the degree of Bachelor of Agriculture. It has instituted courses of lectures in the sciences relating

to Agriculture and in theoretical Agriculture, to which the farmers of the State are invited without charge.

While it is believed that the varied and complex questions with which the farmer has to deal, justify and require, for their most successful treatment, the extended and thorough courses of study necessary for the degree of Bachelor of Agriculture, it is still recognized that comparatively few will return from a six years course of study to the farm again, and, therefore, all possible advantages are offered to young men from the country who enter the institution for a shorter time. The work of the department of Agriculture is shaped so as to give to this class as large a measure of service as possible for whatever time they are on college ground.

LITERARY SOCIETIES.

There are two Literary Societies in the University, the *Alcyone* and the *Horton*. Both are provided with rooms in the University building, the equipment of the Alcyone hall having been mainly furnished through the generosity of the late John G. Deshler, oi Columbus. The societies are vigorous and effective, and furnish to the student a very desirable training in public speaking and parliamentary order.

ADMISSION.

I. TO THE PREPARATORY DEPARTMENT.

For admission to the Preparatory Department of the University, students must pass a satisfactory examination in the branches taught in the common schools, viz.: Reading, Orthography, Writing, Grammar, Geography, Arithmetic, and Algebra through simple equations.

The attention of those proposing to enter the University is especially directed to the terms above given. A competent knowledge of the common school branches is required. The University does not undertake to do the work which the common schools are able and willing to do, viz.: that of grounding the student in the elements of an English education. He must bring with him a fair measure of the training which these schools are prepared to give. If it be asked what is a competent knowledge of these branches, it may be answered that the candidate should certainly have knowledge enough of them to entitle him to a teacher's certificate from a county board of examiners.

Graduates of the high schools of the State are admitted to the Preparatory Department without examination. Applicants having a teacher's certificate of twelve months, are also admitted without examination, except in Algebra, where this study is not included in the certificate.

II. TO THE COLLEGE CLASSES.

For admission to the Freshman Class of any course, the student must sustain examination in the studies of the Preparatory Department, that lead to this course. The Preparatory Department, as now constituted, agrees very well with the course of instruction in the better grade of high schools of the State. The full requisitions, then, for admission to college standing, are as follows:

English Grammar,
Common School Geography,
Physical Geography,
Arithmetic,
Algebra,
Geometry,
Plane Trigonometry,
Botany,
Physics,
Human Physiology,
United States History,
General History,
Latin or German, to the amount of a two years course.

Graduates of high schools of this State, in cities having a population of 5000 or more, by the census of 1870, and of such other high schools and academies of the State as give satisfactory evidence to the faculty of the efficiency of their courses of study, will, on presenting their diplomas, be admitted to the Freshman Class, in any course of study for which their previous high school work shall have fitted them.

Students who do not design to complete a regular course of instruction, are allowed to select such studies as they are prepared to carry on with profit to themselves and without detriment to the regular classes.

Students are admitted to advanced standing in any of the courses, on their sustaining examination in the work required in the University for such standing.

Students entering from other colleges are required to bring certificates of honorable dismission.

The University is open to students of both sexes, but there are no buildings provided for the residence of young ladies on the College grounds. Boarding-places, in respectable families, are secured for such young ladies as enter the institution, but the faculty is not so situated that it can exercise supervision over their conduct outside of College hours. Parents, who place their daughters in the University, should be well satisfied as to their discretion, or else should leave them under the care and control of the family with which they board.

EXPENSES.

1. *College Dues.*—A charge of $5.00 a term, or $15.00 a year, is made against all students, under the head of incidental expenses. *There is no charge for tuition in any department of the University;* but advanced students in Chemistry and Physics are required to pay fees to cover, in part, the cost of materials consumed, and the deterioration of the expensive instruments employed. The fee in the Chemical Laboratory is $10.00 per term, and in the Physical Laboratory $7.00 per term. These dues are required at the opening of each term.

2. *Board.*—There are two dormitories on the College grounds, provided for the use of students. The smaller of these provides unfurnished rooms, *rent free*, to such students as desire to board themselves, and thus to reduce their expenses to a minimum. Twenty students can be accommodated in the building, two students being assigned to each room. The expense of living in this way falls below $2.00 per week.

The larger dormitory can accommodate seventy students. It is, for the present, turned over to the University club, *rent free*. Board, fur-

nished room, fuel, light, and washing are, at present prices, supplied for less than $3.50 per week. New students will not, however, be admitted to the club without special recommendation.

Boarding-clubs are, also, frequently organized in the neighborhood of the college, by students, in which expenses are kept at $3.50 per week, at present prices.

Board, with furnished rooms, can be obtained in private families within convenient distances of the college, at rates varying from $3.50 to $5.00 per week. The ruling rate may be taken as $4.00 per week for young men, and $4.50 for young ladies.

Free access to the college is secured by two lines of street railroads, which connect it with the central portions of the city.

There is a large amount of work on the college farm that can be performed to advantage by students, and for which they are paid at the current rates for such labor. A number of students defray all their college expenses by such labor. In the assigning of work, preference is given to students in the department of agriculture, and to those who are ready to devote a certain number of hours each day to the tasks required. *The University does not guarantee work to all applicants.*

A college uniform has been adopted, with which all members of the military organization are required to provide themselves. The cost of the uniform is about $23.00.

SUMMARY.

The expenses of a college year of thirty-eight weeks, will include the following items, viz.:

College dues	$15 00	$15 00
Board, rooms, etc., at $3.00 per week	114 00 at $4 50	171 00
Total	$129 00	$186 00

This estimate provides for light, fuel and washing, but does not include text-books nor charges for laboratory supplies. Students boarding themselves can reduce the lowest of these estimates at least $30—making a total of $100.

RULES AND REGULATIONS.

The following rules and regulations, among others, are now in force in the University:

STANDING.

1. The standing of students shall be reported at the end of each term as "passed with merit," "passed," "conditioned," or "failed";

such standing to be determined by examination, written, wherever possible.

2. The expression "conditioned" signifies "subject to re-examination at the middle of the following term."

3. The regular work of each laboratory is regarded as the equivalent of five class-room exercises per week. Two consecutive hours daily in the Art department is also so regarded.

4. No special or irregular student is allowed to take less than fifteen or more than eighteen hours per week of class-room work, or its equivalent, and no student conditioned in any study will be permitted to take more than fifteen hours per week the following term.

5. At the close of each term students must pass in examinations in studies, representing at least ten hours per week, in order to retain their standing in college.

6. Students conditioned in studies, representing ten hours per week, must pass satisfactory examinations in at least one-half of those studies before regaining their standing in college.

7. Students failing in examinations, representing ten hours per week, forfeit their place in college thereby.

8. Students who fail in the term examinations, or in an examination for conditions, are required to take the study or studies in which they fail, on their occurrence, in the following year, except when excused by the faculty.

9. Students failing on a re-examination for a condition, are dropped from that class, if a continuous one.

10. Absence from any examination is construed as a failure therein.

11. Students in any three-term class who fail to attain the grade "passed" at the end of more than one term, shall be required to repeat the work of the whole year, unless excused by the professor in charge; and the students in any two-term class who are reported as "failed" at the end of the second term, may be required by the professor in charge to repeat both terms' work.

TERM BILLS.

The payment of term bills is required of all students by the second Wednesday of each term, as the condition of remaining in college.

CALENDAR.

The Winter term commences on Thursday, January 4, 1883, and continues 12 weeks, closing on Wednesday, March 28.

The Spring term commences on Thursday, April 5, and continues 11 weeks, closing on Wednesday, June 20 (Commencement Day).

The Fall term commences on Thursday, September 13, and continues 14 weeks, closing on Wednesday, December 19.

CATALOGUE OF STUDENTS.

The following catalogue includes only the names of students in attendance from November 1st, 1881, to November 1st, 1882:

The under graduate students of the University are classified as follows: —

(1.) Regular Students.
(2.) Special Students.
(3). Preparatory Students.

The first division includes the four college classes; the second includes students that have attained college rank, by completing the preparatory course or its equivalent, but are now pursuing selected studies; the third includes students that are pursuing the regular preparatory course.

Heretofore there has been a fourth group of Unclassified Students, including all not embraced in the three divisions above named.

But with the beginning of the current year the following plan of classification was put into operation:

1st. The various departments of the University will hereafter be classified in four schools, designated as follows:

THE SCHOOL OF ARTS AND PHILOSOPHY, including those studies which enter into the courses leading to the degress of Bachelor of Arts and Bachelor of Philosophy.

THE SCHOOL OF SCIENCE, including those studies which enter into the course leading to the degree of Bachelor of Science.

THE SCHOOL OF ENGINEERING, including those studies which enter into the courses leading to the degrees of Civil Engineering, Mechanical Engineer, and Mining Engineer.

THE SCHOOL OF AGRICULTURE, including those studies which enter into the course leading to the degree of Bachelor of Agriculture.

2nd. Every student (resident graduates alone excepted) shall enter one of the above schools, or shall be assigned to that one in which the majority of his studies are found (in case of irregularity).

There shall be so unclassified students.

3rd. Each school will be under the direction of a standing committee of the faculty, having power to act in all matters pertaining to

the studies of students in such school, and in matters of minor discipline. The following Committees have been appointed for the various schools:

ARTS AND PHILOSOPHY—The President, the Professors of Latin and Greek, History, Geology, Chemistry, and French and German.

SCIENCE—The President, the Professors of Mathematics, Chemistry, Physics, Geology and Zoology.

ENGINEERING—The President, the Professors of Civil Engineering, Mechanical Engineering, Mining Engineering, Physics, and Drawing.

AGRICULTURE—The President, the Professors of Agriculture, Horticulture, Mechanics, Metallurgy, and Zoology.

4th. All students in each school will be regarded as belonging to one of two groups; first, those whose purpose it is to enter upon one of the regular courses of study, with the expectation of taking its degree; second, those who come to the University for the purpose of pursuing some special study or line of work, and who do not expect to take a degree.

The courses of study leading to the various degrees having been arranged by the faculty in the order which they believe to be the best adapted to the general requirements of students, *all who do not belong to the second of the groups indicated*, will be required to enter upon the regular work of the college classes to which they belong, or in case of present irregularity to remove such irregularity as speedily as practicable in the manner prescribed by the committee of the school in which they are classed, and no such student will be allowed to take more or other than his regular studies without presenting a request with reason therefor to his committee, and receiving its consent. Such consent may be revoked at any time when it may seem advisable to do so.

Students belonging to the second group, viz.: those coming to the University for a limited time with the definite purpose of pursuing some special line of work, will in each case enter the school in which their proposed work is chiefly included, and shall lay before the committee a statement of the end in view, the studies proposed for the accomplishment of that end, and the probable period of residence.

While it will be the purpose of each committee, in accordance with the well established policy of the University, to allow to such students full freedom in the selection of the branches which they desire to pursue, subject only to the necessary limitations that they are prepared to take up the branches they select, and that such branches are in accordance with the end proposed, it is also their intention to hold students as regularly to the performance of their accepted schemes of work as they do the members of the first group to their prescribed course of study;

and they will refuse admission to this group to all of whose definiteness of purpose or fitness to undertake the work proposed they fail to receive satisfactory evidence.

5th. The names of students as printed in the University catalogue shall be followed by the proper abbreviations of the schools to which they respectively belong. Regular students shall be published as belonging to the college classes to which they are assigned by their respective committees. Students pursuing particular lines of work shall, if they have attained college standing, be published as special students; if otherwise, as irregular preparatory.

In accordance with the requirements of the foregoing classification, the students not included in the regular classes, and who have not yet attained a college standing by completing all preparatory studies, are published as Irregular Preparatory.

NOTE: The abbreviations of the several schools are not appended to the names of students in the following catalogue; but they will be appended hereafter in the annual catalogue according to the requirement specified in the fifth paragraph of the plan of classification above described.

By a recent resolution of the Board of Trustees, the portion of the Annual Report of the University included under the heading, "CIRCULAR AND CATALOGUE", will be made to correspond with the academic year of the University terminating at Commencement, and not (as heretofore) with the fiscal year of the State, terminating in November.

Degrees in course were conferred at the last commencement, June 21st, 1882, as follows:

The degree of Mining Engineer upon DAVID O'BRINE, B.Sc.

CLASS OF 1882.

WILLIAM W. DONHAM, B.Sc.
WILLIS F. FAY, B.A.
FREDERIC KEFFER, M.E.
JOHN A. MCDOWELL, B.Sc.
OLIVER L. FASSIG, B.Sc.
SIOUX GLOVER, B.Sc.
IRVIN LINTON, B.A.
CORA WARNER, B.PH.
HORACE L. WILGUS, B.Sc.

RESIDENT GRADUATES.

Name.	Residence.	County.
David O'Brine, B.Sc., M.E.	Ohio State University, Columbus	Franklin.
Oliver L. Fassig, B.Sc.	" "	"
John A. McDowell, B.Sc.	" "	"
Horace L. Wilgus, B.Sc.	" "	"

POST GRADUATES.

Name.	Residence.	County.
Brinkerhoff, Warren E., B.Sc., Heidelberg	Tiffin	Seneca.
Gow, Alexander Murdoch, B.Sc., Washington and Jefferson	Washington, Pennsylvania	
Miller, Albert Craig, A.B., Washington and Jefferson	Washington, Pennsylvania	
Morgan, William Earl, A.B., Penn	Lowell, Kansas	

REGULAR STUDENTS.

Name.	Residence.	County.
SENIOR CLASS.		
Ackerman, Fremont	Columbus	Franklin.
Bradford, Joseph Nelson	"	Franklin.
Dun, John J	Dublin	Franklin.
Galbraith, John Howard	Columbus	Franklin.
Higbee, Charles E	Cleveland	Cuyahoga.
Howard, Arthur Bascom	Reily	Butler.
Knopf, George William	Columbus	Franklin.
Makepeace, George D	Cleveland	Cuyahoga.
Marvin, Charles Frederic	Columbus	Franklin.
Miller, Charles Christian	Baltimore	Fairfield.
Sperr, Frederick William	Jefferson	Ashtabula.
Van Harlingen, Edward M	Columbus	Franklin.
JUNIOR CLASS.		
Ackerman, Eli Osborn	Columbus	Franklin.
Anderson, James Thomas	Columbus	Franklin.
Chamberlain, Helena Whiting	Yellow Springs	Greene.
Dun, George William	Dublin	Franklin.
Green, Clarence Creesy	Middleport	Meigs.
Lovejoy, Jesse R	Columbus	Franklin.
Malone, William R	Conneaut	Ashtabula.
Marple, Charles Allen	Columbus	Franklin.
Mead, Clinton Van Rensselaer	Jefferson	Ashtabula.
Mix, Melvin Noble	Columbus	Franklin.
Orton, Edward, Jr	Columbus	Franklin.
Sabine, Anna Ware	Richwood	Union.
Sparks, Edward Erle	London	Madison.
Vanderburg, Charles Russell	Columbus	Franklin.
Wikoff, John Burkett	Columbus	Franklin.
SOPHOMORE CLASS.		
Benedict, Edward Cyrus	Dayton	Montgomery.
Erskine, John Geddes	Lowellville	Mahoning.
Hale, John Perley	Mansfield	Richland.
Harrison, William Henry	Columbus	Franklin.
Lindenberg, Louis Bisky	Columbus	Franklin.
Marquardt, Jesse Claud	Tiffin	Seneca.
Miller, Charles William	Columbus	Franklin.
Peters, William Lincoln	Columbus	Franklin.
Pleukharp, Charles Vernon	Columbus	Franklin.
Pomerene, William Reed	Coshocton	Coshocton.
Schaub, Edward Louis Tacher	Columbus	Franklin.
Taylor, Francis Asbury	Columbus	Franklin.
Terry, Harry Kirk	Columbus	Franklin.
Twiss, George Ransom	Columbus	Franklin.
Wall, Frank Thomas	Marysville	Union.

REGULAR STUDENTS.—Continued.

Name.	Residence.	County.
	FRESHMAN CLASS.	
Armstrong, Philip Damascus	Tippecanoe City	Miami.
Beach, Charles Maxwell	Kelloggsville	Ashtabula.
Beatty, George William	Columbus	Franklin.
Benbow, William	Columbus	Franklin.
Bentley, William Preston	Wilmington	Clinton.
Bingham, Harry	Columbus	Franklin.
Bird, Minnie Elma	Zanesville	Muskingum.
Calderhead, James A	Limaville	Stark.
Carroll, Clara	St. Clairsville	Belmont.
Comly, Guy Stuart	Columbus	Franklin.
Connell, William Adams	Portsmouth	Scioto.
Converse, Edward Jasper	Columbus	Franklin.
Coulter, Guy	Columbus	Franklin.
Cunningham, George Strode	Lancaster	Fairfield.
Davidson, Arthur	Findlay	Hancock.
Devol, Anna Laura	Marietta	Washington.
Dozer, Martin Theodore	Deavertown	Morgan.
Dye, John W	Zanesville	Muskingum.
Eastman, John Coates	West Alexandria	Preble.
Fassig, Alice Anna	Columbus	Franklin.
Fisher, Clara	Columbus	Franklin.
Foster, Newton Poage	Sharonville	Pike.
Gilbert, Newton Whiting	Angola, Ind	
Gordon, George Henry	Columbus	Franklin.
Heinlein, Andrew John	Bridgeport	Belmont.
Hill, Frank Edwin	Neville	Clermont.
Hirst, Charles Hubert	Columbus	Franklin.
Holliday, Thomas Ellsworth	Cassville	Harrison.
Jones, Alfred Andrew	Columbus	Franklin.
Lacy, William Crawford	Youngstown	Mahoning.
Masters, George Albert	Toledo	Lucas.
McMurray, John Leathers	Columbus	Franklin.
Milligan, James Porter	Rushville	Fairfield.
Mills, Stephen A	Washington C. H.	Fayette.
Negelspach, Otto	Millersburg	Holmes.
Payne, Halbert Edwin	Titusville, Pennsylvania	
Pfaff, Carl Philip	Columbus	Franklin.
Sabine, Wallace Clement	Richwood	Union.
Schroll, Otto	Columbus	Franklin.
Scott, Anna Neill	Columbus	Franklin.
Scott, May Mermod	Columbus	Franklin.
Scott, Minnie Odella	Columbus	Franklin.
Scott, Winfield	Columbus	Franklin.
Sheperd, Jacob Lincoln	Osborne	Greene.
Smart, George	Chillicothe	Ross.
Sneath, Ralph D	Tiffin	Seneca.
Snyder, David Forrest	Springfield	Clarke.
Stockwell, Harry Leonard	Columbus	Franklin.
Thompson, Howard N	Columbus	Franklin.
Thurston, Azor	Grand Rapids	Wood.
Viets, William Burton	Amboy	Ashtabula.
Warner, Annie Laurie	Marietta	Washington.
Watt, Sern Parley	Jamestown, Nebraska	

SPECIAL STUDENTS.

Name.	Residence.	County.
Ashinger, Frank Christopher	Upshur	Preble.
Braun, Charles Lincoln	Columbus	Franklin.
Brotherton, William	Columbus	Franklin.
Conaway, John Wilbur	Arcadia	Hancock.
Lovejoy, Ellis	Columbus	Franklin.
Miller, William Henry	McArthur	Vinton.
Moore, Alvin A	Kenton	Hardin.
Morrison, Ella Hortense	Washington, D. C	
Morton, George Luton	South Newbury	Geauga.
Selby, Augustine Dawson	Bartlett	Washington.
Smith, Horace Prescott	Adam's Mills	Muskingum.
Smith, Philo Christopher	Canton	Stark.
Tallmadge, Theodore	Columbus	Franklin.
Warner, Carrie Ellis	Marietta	Washington.
Westfall, La Fayette	Covington	Miami.

PREPARATORY STUDENTS.

Name.	Residence.	County.
SECOND YEAR.		
Alspach, Edmund Frank	Canal Winchester	Fairfield.
Ballou, Harry Augustus	Columbus	Franklin.
Cathcart, Josie Maud	Columbus	Franklin.
Converse, Howard Pendleton	Columbus	Franklin.
Cooke, Russel Pardon	Chillicothe	Ross.
Cupp, Frank Pickering	Columbus	Franklin.
Devol, William Stow	Marietta	Washington.
Dick, Harry Bancroft	Hopewell P. O	Muskingum.
Dowsett, Edward	Honolulu, Sandwich Islands	
Erskine, James H	Lowellville	Mahoning.
Fawcett, Joseph Mitchel	Carrollton	Carroll.
Fickel, Isaac Harrison	Hilliard	Franklin.
Firestone, Joseph F	Canton	Stark.
Floyd, Stephen Ellsworth	Wintersville	Jefferson.
Gordon, John La Fayette	Worthington	Franklin.
Haig, James	Columbus	Franklin.
Hamilton, Thomas Benton	Columbus	Franklin.
Hoover, Ellis A	West Milton	Miami.
Howells, Edwin Stanton	Massillon	Stark.
Jackson, Jonathan	Vevay, Ind	
Keifer, William White	Springfield	Clarke.
Lucas, Mary Eliza	West Jefferson	Madison.
Madden, Harry P	Mutual	Champaign.
Martin, Franz Siegle	Bloomville	Seneca.
Martin, Frank Wilson	Bloomville	Seneca.
McKee, Caleb Lodge	Columbus	Franklin.
McKinney, William Henry	Morrow	Warren.
McLaughlin, James Bennett	Columbus	Franklin.
McLaughlin, John Rushmore	Columbus	Franklin.
McPherson, William, Jr	Xenia	Greene.
Merion, James Edwin	Columbus	Franklin.

PREPARATORY STUDENTS—Continued.

Name.	Residence.	County.
SECOND YEAR—Continued.		
Miller, Frank	Crestline	Crawford.
Mullay, Anna	Columbus	Franklin.
Munger, John Charles	Xenia	Greene.
Myers, Joseph Simmons	Columbus	Franklin.
Myers, Uriah Henry	Columbus	Franklin.
Nauman, William Henry	Dayton	Montgomery.
Neil, Flora	Columbus	Franklin.
Neil, William	Columbus	Franklin.
Niswander, Albert	Central College	Franklin.
O'Harra, Arthur	Columbus	Franklin.
Oxer, Orange Eddy	Campbellstown	Preble.
Peasley, Hattie A	Flint	Franklin.
Sain, Charles Magnite	Logan	Hocking.
Scheibell, William Oliver	Columbus	Franklin.
Smith, Charles Piatt	Clintonville	Franklin.
Smith, Lot Leonard	Columbus	Franklin.
Spurgeon, Mattie Amelia	Clintonville	Franklin.
Taylor, Joseph Russell	Columbus	Franklin.
Thurston, Ella	Grand Rapids	Wood.
Wade, William Nicholas	Columbus	Franklin.
Welsh, Emmet Alvin	Deersville	Harrison.
Williams, Paul Sidney	Scioto Furnace	Scioto.
Wilsey, Glenni Sill	Conneaut	Ashtabula.
Woods, Horace Allen	Chilo	Clermont.

PREPARATORY STUDENTS.

Name.	Residence.	County.
FIRST YEAR.		
Baird, Chester Reamy	Columbus	Franklin.
Beatty, William Gurley	Columbus	Franklin.
Bentley, Elton Monroe	Wilmington	Clinton.
Blankner, Frederick, Jr	Columbus	Franklin.
Blinn, Minnie Eolia	Columbus	Franklin.
Breyfogle, Fred Sherman	Columbus	Franklin.
Browne, Louie E	Columbus	Franklin.
Burkley, Joseph Frank	Columbus	Franklin.
Burns, George Burgess	Troy	Miami.
Byers, Albert Gallation	Columbus	Franklin.
Campbell, William Edward	Groveport	Franklin.
Carroll, Harley P	Potsdam	Miami.
Charters, William Filson	New Lisbon	Columbiana.
Clark, Cheever Simpson	Deersville	Harrison.
Comly, Smith Mitchel	Columbus	Franklin.
Comly, Susie Anthony	Columbus	Franklin.
Cook, Cora Estella	Harlem	Delaware.
Cook, Ida	Columbus	Franklin.

PREPARATORY STUDENTS—Continued.

Name.	Residence.	County.
First Year—Continued.		
Craig, Moses	Peakpack, N. J	
Daggett, William Frederic	Napoleon	Henry.
Doe, Carrie Ella	Columbus	Franklin.
Dunlap, William Perry	Columbus	Franklin.
Durrell, Harry Philip	Pleasant Ridge	Hamilton.
Dyer, Joseph Hooker	Georgesville	Franklin.
Eck, Marcus W	Middletown	Butler.
Elliott, Frederic Wallace	Columbus	Franklin.
Emery, Vernon Judson	Napoleon	Henry.
Falkenbach, Frank Joseph	Columbus	Franklin.
Forse, Joseph Clark	Pittsburgh, Pa	
Fox, Edgar B	LaFayette	Madison.
Frame, Cornelius Aultman	Washington	Guernsey.
Fravel, George B	Columbus	Franklin.
Galloway, Frank Calvert	Terrace Park	Hamilton.
Garrett, Howard Thompson	Columbus	Franklin.
Gates, Harry Morton	Columbus	Franklin.
Godman, Leonard Harper	Columbus	Franklin.
Graves, Joseph Howard	Columbus	Franklin.
Gregg, George Crouse	Circleville	Pickaway.
Grube, Dora E	Clintonville	Franklin.
Gunn, George Erastus	Mentor	Lake.
Guy, Rolla Bradley	Mechanicsburg	Champaign.
Hall, Bertha	Pleasant Corners	Franklin.
Harmon, Maud	Columbus	Franklin.
Harris, Thomas Charles	Ironton	Lawrence.
Hayes, Seth	Columbus	Franklin.
Hedges, Harry	Urbana	Champaign.
Herd, Joseph Ephraim	Clintonville	Franklin.
Hess, William Gralys	Columbus	Franklin.
Higgins, Patrick James	Summerford	Madison.
Hildebrand, Charles Quinn	Wilmington	Clinton.
Howell, Addis Emmet	Flushing	Belmont.
Hull, Richard Edie	Columbus	Franklin.
Inen, John Francis	Milford	Clermont.
Jennings, Carl Marsh	Mutual	Champaign.
Jones, Richard	Columbus	Franklin.
Kemmler, Edward Albert	Columbus	Franklin.
Kennedy, Clark H	Youngstown	Mahoning.
Legg, John Newton	Columbus	Franklin.
Luccock, Henry Havelock	Kimbolton	Guernsey.
Luse, Elliott	Barry	Cuyahoga.
Maetzell, Henry Montezuma	Columbus	Franklin.
Martin, Hannah L	Camp Chase	Franklin.
McCoy, Thomas A	Seville	Medina.
McDaniel, William Foreman	Celina	Mercer.
McNaghten, Noah	Columbus	Franklin.
Miller, Mary Ellen	Baltimore	Fairfield.
Miller, Thomas Ewing, Jr.	Columbus	Franklin.
Mix, Edgar Woods	Columbus	Franklin.
Monypeny, George Bronson	Columbus	Franklin.
Needles, Ada	Groveport	Franklin.
Needles, Blanche	Groveport	Franklin.

PREPARATORY STUDENTS—Continued.

Name.	Residence.	County.
First Year—Continued.		
Needles, Cora	Groveport	Franklin.
Neil, Olive	Columbus	Franklin.
Neill, James John	Sandusky	Erie.
Noel, Elijah Putnam	Portsmouth	Scioto.
Peebles, Milton Wood	Chester Hill	Morgan.
Perry, Susan E	Columbus	Franklin.
Price, Mark Elmer	Newark	Licking.
Rardin, Joseph Spangler	Bartlett	Washington.
Raymund, Frank Milton	Basil	Fairfield.
Rich, John Edward	Columbus	Franklin.
Robinson, Edmund Letts	Coshocton	Coshocton.
Samuel, Edward	Westerville	Franklin.
Samuel, Frank Ellsworth	Westerville	Franklin.
Sayler, Lurten Roscoe	Gratis P. O	Preble.
Scarff, William Neff	New Carlisle	Clarke.
Shanck, John Emmet	Union	Montgomery.
Shedd, Carlos Butler	Columbus	Franklin.
Shields, Harry Clifton	Columbus	Franklin.
Smith, John Samuel	Columbus	Franklin.
Smith, Rose	Clintonville	Franklin.
Stephens, Herbert Taylor	Columbus	Franklin.
Stimmel, Thomas Randall	Columbus	Franklin.
Stimson, George Henry	Columbus	Franklin.
Thompson, Anna Elizabeth	Flint	Franklin.
Tussing, Harry	Columbus	Franklin.
Wasson, William Alfred	Columbus	Franklin.
Whiteley, Frederic Patterson	Findlay	Hancock.
Wilbur, E. C	Weymouth	Medina.
Wilgus, James Alva	Conover	Miami.
Willim, William Benjamin	Stillwater, Minn	
Winter, Charles Albert	Portsmouth	Scioto.
Woodworth, Henry Julian	Jefferson	Ashtabula.

IRREGULAR PREPARATORY.

Name.	Residence.	County.
Alwood, William Bradford	Columbus	Franklin.
Amy, Charles Sumner	Payn's Corners	Trumbull.
Barren, Henry A	Cleveland	Cuyahoga.
Beebe, Stacey Barcroft	Coshocton	Coshocton.
Bixler, William Irving	Pyrmont	Montgomery.
Blackford, Francis Webster	Chillicothe	Ross.
Breaden, Robert Mackey	Youngstown	Mahoning.
Bryson, William Abbott	Dunlapsville, Ind.	
Campbell, William Wallace	Fostoria	Seneca.
Claypoole, Alice	Columbus	Franklin.
Claypoole, Curtis	Columbus	Franklin.

IRREGULAR PREPARATORY—Continued.

Name.	Residence.	County.
Clouse, William Leonard	Granville	Licking.
Cook, Nannie Jane	Bridgeport	Belmont.
Cottingham, Fenton G.	Sharon Center	Medina.
Dennis, Frank Foster	Amanda	Fairfield.
Denver, James William	Wilmington	Clinton.
DeWitt, Clara	Norwalk	Huron.
Dickey, Clarence Walter	Central College	Franklin.
Dickey, Marcus Cortland	Central College	Franklin.
Fay, Waldo Guy	Columbus	Franklin.
Fox, Herman S.	Brookville	Montgomery.
Fuller, Ralph Lathrop	Elyria	Lorain.
Gehres, Joseph Abraham	Marshallville	Wayne.
Gladding, Jay Elisha	Rock Creek	Ashtabula.
Green, William James	Granger	Medina.
Greise, Emanuel	Cleveland	Cuyahoga.
Guy, Samuel B.	Jefferson	Ashtabula.
Hale, John Park	Bath	Summit.
Heinlein, Charles Joseph	Bridgeport	Belmont.
Henderson, Lutrelle	Marysville	Union.
Hendrixson, Oliver Perry	Columbus	Franklin.
Herms, Albert Edward	Portsmouth	Scioto.
Hoge, Osmond M.	Cambridge	Guernsey.
Holl, Benjamin Franklin	Canton	Stark.
Housel, Ransom B.	Lake	Stark.
Hufford, Welton	South Lebanon	Warren.
Ide, A. J.	Columbus	Franklin.
Kahler, Harry Adams	McConnelisville	Morgan.
Keene, Elmer Livingston	Fairfield, Oregon	.....
Lanphear, Oscar Alvin	Columbus	Franklin.
Laundon, Ernest Thomas	Elyria	Lorain.
Long, John Andrew	Sharon	Noble.
Maginnis, Sherdie	Zanesville	Muskingum.
Maynard, John Phillips	Washington C. H.	Fayette.
Maynard, Walter Edgar	Washington C. H.	Fayette.
McClelland, George B.	Cambridge	Guernsey.
Miller, Ira H.	Columbus	Franklin.
Mills, John William	West Alexandria	Preble.
Mills, William Cullen	Pyrmont	Montgomery.
Moore, Frank Edmund	Chardon	Geauga.
Morrison, Clarence Graham	Columbus	Franklin.
Myers, Noah	North Hampton	Clarke.
Packer, William Burt	Limaville	Stark.
Paiste, Harry Thomas	West Chester, Pa.	.....
Parker, K. K.	Columbus	Franklin.
Prateer, William F.	Morrow	Warren.
Ratzburg, Paul William	Shenandoah, Pa.	.....
Ray, Frank Arnold	Jefferson	Ashtabula.
Riser, Henry Edward	Columbus	Franklin.
Root, Willis Jay	Andover	Ashtabula.
Rowland, Oliver Lincoln	Pleasantville	Fairfield.
Scott, Daisy Medill	Columbus	Franklin.
Shedd, Harry	Columbus	Franklin.
Shellammer, William Charles	Clyde	Sandusky.
Siegel, Frank Anthony	Kalida	Putnam.
Smylie, William Harrison	Cadiz	Harrison.
Stafford, Charles Albert	Hillsboro	Highland.
Stewart, Mary A.	Norwalk	Huron.
Sweeney, Thomas Daniel	Covington	Miami.

IRREGULAR PREPARATORY—Continued.

Name.	Residence.	County.
Tarbox, Theodore	Cedarville	Greene.
Taylor, John Myers	Columbus	Franklin.
Thiesen, Henry Grant	Napoleon	Henry.
Thompson, Charles Henry	Oregon	Warren.
Thompson, John Ford	Layman	Washington.
Vandervort, William P	Morrow	Warren.
Vause, William Arthur	Columbus	Franklin.
Weidman, Nellie A	Chillicothe	Ross.
Whiley, Charles Bell	Lancaster	Fairfield.
Whitacre, Elmer Ellsworth	Morrow	Warren.
Wilhelm, Frank Sherman	Portsmouth	Scioto.
Wonders, James Crew	Zanesfield	Logan.
Woolf, Edgar Hall	Grove City	Franklin.
Wright, James M	Fredonia	Licking.
Youngs, Fred Elliott	Alleghaney City, Pa	
Zaumseil, Oscar Clemens	Ripley	Brown.

TREASURER'S REPORT.

COLUMBUS, OHIO, *November* 15, 1882.

HON. JAS. B. JAMISON, *President of the Board of Trustees of the Ohio State University:*

DEAR SIR: Herewith is my twelfth annual report of the financial management of the University for the fiscal year ended this day.

The order of the report is the same as that of last year, and includes—

I. A general cash statement, showing receipts, expenditures and balances.

II. The cash transactions relating to the sale of the Virginia Military Lands, ceded to the University from 1871 to date.

III. A full statement of the Endowment Fund, held by the State and pledged to the support and maintenance of the University; to which is appended a summary statement covering the whole period of the institution from 1871 to 1882, inclusive.

IV. A detailed statement of the cash received, from whatever source, into my hands during the current year.

V. A detailed statement of the disbursements for the same period, followed by a list of officers and employes, and the salaries of each, and a statement of the minor appropriations made by the Board of Trustees.

As more or less confusion and misinterpretation of the Endowment Fund and interest account necessarily exists on account of the dates to which the interest is required by law to be calculated, I most respectfully recommend that the General Assembly be requested to amend section 8146 of the Revised Statutes, so that the calculations of interest may be made to conform to the fiscal year of the State; that the interest be computed to the 15th of May and November annually, instead of 1st of January and July, as at present.

All of which is respectfully submitted.

HENRY S. BABBITT, *Treasurer.*

STATEMENT I.

A GENERAL STATEMENT OF THE CASH ACCOUNTS FOR THE FISCAL YEAR ENDING NOVEMBER 15, 1882.

HENRY S. BABBITT, *in account with the Ohio State University:*

DR.

Nov. 16, 1881.	To balance of cash on hand		$4,062 35
	To cash from various sources, as follows, viz:		
	From the State Treasury on account of the income of the Endowment Fund, being balance of interest accrued to July 1, 1881	$10,000 00	
	Interest accrued from July 1, 1881, to January 1, 1882	16,961 33	
	On account of ($16,660.40) the interest accrued from January 1, 1882, to July 1, 1882	4,660 40	
	Total interest received		$31,621 73
	From the State Treasury, the amount appropriated toward paying the expenses of the Board of Trustees	$350 00	
	From students' term bills, viz.:		
	For winter term, 1881-2	$1,577 75	
	Spring term, 1882	1,435 00	
	Fall term, 1882	2,083 00	
			$5,095 75
	From proceeds of notes received for sale of Virginia Military Lands	$6,042 03	
	Interest on such notes	985 45	
	Sale of Virginia Military Lands	750 12	
			$7,777 60
	From rent of houses:		
	President Scott	$385 00	
	Professor Townshend	300 00	
	Professor Derby	240 00	
			$925 00
	From Prof. Norton for sale of supplies to students		198 35
	Total receipts during the year		$45,968 43
	Total receipts, including above balance		$50,030 78

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Nov. 15, 1882.	By disbursements as follows (for particular items, see detailed statement V.):		
	For support and maintenance of the University, viz.:		
	For salaries of faculty, teachers, assistants, other officials and regular employes	$30,039 96	

Nov. 15, 1882.	For expenses of Board of Trustees	474 15	
	" fire insurance	448 06	
	" fuel	732 77	
	" telephone service	125 00	
	" other current expenses	1,292 16	
			$33,112 10
	For department supplies	$3,254 89	
	" furniture, not included in dep't supplies	174 10	
	" library	273 17	
	" farm and lawn expenses	529 90	
	" improvements	116 00	
	" repairs	874 36	
			$5,222 42
	For expenses in care of Va. Military Lands	$847 84	
	" account of construction of three residences	6,335 01	
			$7,182 85
	Total disbursements		$45,517 37
	Balance of cash on hand this day		4,513 41
	Total receipts, as above		$50,030 78

STATEMENT II.

VIRGINIA MILITARY LAND SALES.

The cash receipts into the college treasury from the proceeds of the sales of these lands, as reported to November 15, 1881 (page 88 of 11th annual report), were		$38,787 85
Add to this proceeds of sale by the Auditor of State, in 1877, not heretofore included in this statement		1,592 56
Receipts during fiscal year, 1882		7,777 60
Total receipts to November 15th, 1882		$48,158 01
Total expenses on this account to November 15, 1881, as stated in the last annual report	$18,281 22	
Expenses in 1882	847 84	
Total expenses to date		$19,129 06
Balance showing net receipts to date		$29,028 95
Of this amount there was paid into the State Treasury to the credit of the endowment fund (in compliance with Section 8433 of the Revised Statutes) June 29, 1880	$12,073 28	
And the sum certified to by the Auditor of State pursuant to Joint Resolution of the General Assembly, adopted April 24, 1877	1,592 56	
Total paid into the endowment fund		$13,665 84
Leaving net cash proceeds to date		$15,363 11

STATEMENT III.

SHOWING THE AMOUNT OF THE OHIO STATE UNIVERSITY ENDOWMENT FUND, COMPUTED IN ACCORDANCE WITH THE PROVISIONS OF THE ACT PASSED FEBRUARY 10, 1870, (Revised Statutes, Sec. 8446.)

Amount of apparent principal, as reported last year, to July 1, 1881		$555,346 69
Add interest on this sum, to January 1, 1882	$16,660 40	
Less payments made during same period:		
Aug. 10, 1881, $1,961 33, with interest to Jan. 1, 1882, 4 mos. 20 days	$15 77	
Oct. 6, 1881, 2,500 00, " " 2 " 21 "	35 00	
Nov. 5, 1881, 2,500 00, " " 1 mo. 15 "	18 75	
Dec. 10, 1881, 2,500 00, " " 20 "	8 33	
Dec. 23, 1881, 2,500 00, " " 7 "	2 91	
Dec. 31, 1881, 2,500 00, " " ... "	.....	
$14,461 33	$110 76	
Total	14,572 09	
Net additions to principal		2,088 31
Making the apparent principal January 1, 1882		$557,435 00
Add interest on this amount to July 1, 1882	$16,723 04	
Less payments made during the same period, as follows:		
Jan. 31, 1882, $2,500 00, with interest to July 1, 1882, 5 mos. ... days	$62 50	
Febr. 28, 1882, 1,961 33, " " 4 " ... "	39 21	
Mar. 31, 1882, 3,000 00, " " 3 " ... "	45 00	
May 18, 1882, 3,000 00, " " 1 mo. 12 "	21 00	
June 30, 1882, 5,000 00, " " 0 " ... "	.....	
$15,461 33	$167 71	
Total	15,629 04	
Net additions to principal		1,094 00
Apparent principal July 1, 1882		$558,529 00
Interest upon this sum, calculated under the provisions of Sections 8433 and 8446 of the Revised Statutes, for the year 1882-3, payable January 1, 1883, and July 1, 1881, will amount to		$33,511 74

I repeat the observations I made under this head upon page 84 of the tenth annual report.

In order that there may be no misunderstanding in regard to the amount of the Irreducible Fund of the University in the State Treasury, it is proper to state, that the undrawn balance of accrued interest to July 1, 1882, is included in the above (apparent) principal sum. Requisitions having been made for the same before July 1st, it may be drawn and disbursed; this accrued sum amounts to $20,660.40, and will be drawn as needed. It will be observed by the statement IV of receipts, that $8,660.40 of this sum has been drawn since July 1st, leaving $12,000.00 of the reqisitions of the

Commissioners of the Sinking Fund in my possession at this date. The expenditure of all of this sum leaves the *actual* amount of the Irreducible Endowment Fund, $537,868.60.

SUMMARY STATEMENT.

I append a "Summary Statement of the Endowment Fund" from the beginning in 1871.

Amount of fund as reported by the Auditor of State on Jan. 1st, 1871, $435,138.29.

Interest accruing to the same, and amounts drawn from the State Treasury from January 1, 1871, to July 1 1882, as follows:

Years.	Interest accrued.	Amounts drawn.
1871	$25,753 81	$35,745 00
1872	29,393 54	2,200 00
1873	29,966 66	12,500 00
1874	31,022 04	2,800 00
1875	31,245 16	29,000 00
1876	31,960 46	33,000 00
1877	31,668 79	30,903 73
1878	31,927 03	27,488 45
1879	32,079 61	30,196 81
1880	33,006 67	27,866 00
1881	17,163 80	21,445 00
1882	33,104 97	29,922 66
Totals	$358,292 54	$283,067 65

These aggregate amounts, with some fluctuations in the statement of the annual items, correspond exactly with the amount of the annual statements made by the Auditor of State in his statement of the entire irreducible debt of the State, which consists of several other funds beside the University Fund.

Amount of fund as reported by Auditor as above	$435,138 27
Total accrued interest	358,292 54
Add amount of bonds received from Franklin county and placed in the State Treasury in 1871, which was paid in 1881, and the proceeds credited to the Endowment Fund, according to act of June 21, 1871	34,500 00
Add also amount of net proceeds of sales of Virginia military lands, by authority of Joint Resolution of the General Assembly, adopted April 24, 1877	1,592 56

Amount of proceeds of such sales paid into the State Treasury by Treasurer of the University in 1880	12,073 28
Total fund and accumulations to July 1, 1882	$841,596 65
Deduct amounts drawn from the Treasury in same time	283,067 65
Leaving apparent principal July 1, 1882	$558,529 00

The amount drawn out in 1871 includes $34,245 specially authorized by Act of Jauuary 21, 1871, being one-tenth part of the net proceeds of the sale of the Land Scrip donated to the State by the General Government. The calculations of interest up to 1880, inclusive, were made to the end of the calendar year, after the close of the fiscal year, and the amounts drawn were also stated to the close of the fiscal year (November 15th.) The calculations of interest, and the amounts drawn in the past two years, are made to July 1st, respectively.

STATEMENT IV.

SHOWING IN DETAIL THE CASH RECEIPTS FROM ALL SOURCES DURING THE FISCAL YEAR ENDING NOVEMBER 15, 1882, BY HENRY S. BABBITT, TREASURER.

Date.	From whom received, and on what account.	Amount.	Total.
1881.			
Nov. 16	Balance of cash on hand		$4,062 35
18	James Parks, Va. Military Land, note	$30 00	
	" " " interest	1 80	
	Samuel Brown, " interest	2 00	
25	J. F. Miles, " notes (3)	120 60	
	" " interest	21 22	
30	Robert Smith, " note	31 00	
	" " interest	4 10	
	Leroy Moss, " notes (2)	16 00	
	" " interest	80	
Dec. 1	Vinson Beaver, " note	32 47	
	" " interest	9 75	
3	Prof. S. C. Derby, house rent for November	20 00	
10	Andrew Pollock, Va. Military Land, notes (2)	155 00	
			444 74
	State Treasury, interest on endowment		2,500 00
23	" " "		2,500 00
	S. C. Derby, house rent for December	$20 00	
	E. Pendleton, Va. Military Land, notes (2)	50 00	
	" " interest	16 00	
			86 00
28	W. Q. Scott, Pres't., house rent Oct. 1 to June 1		105 00
30	Henry Morten, Va. Military Land, notes (3)	$149 17	
	" " interest	8 95	
	Johnson Allen, " notes (2)	78 44	
	" " interest	10 48	
			247 04
31	State Treasury, interest on endowment		2,500 00
1882.			
Jan. 12	Samuel Hopper, Va. Military Land, interest	$2 47	
	Andrew Spence, " note	62 43	
	" " interest	28 57	
	Mitler & Bunn, " notes (3)	46 86	
	" " interest	6 20	
			146 53
31	J. F. Miles, Va. Military Land, notes (3)	$39 75	
	" " interest	7 81	
	Henry Morten, " notes (7)	380 82	
	" " interest	23 80	
	Isaac Smalley, " note	19 00	
	" " interest	2 50	
	W. W. Compton, " note	30 00	
	" " interest	2 52	
	S. C. Derby, house rent for January	20 00	
			526 20
	State Treasury, interest on endowment		2,500 00
Feb. 8	John McCoy, Va. Military Land, note	$11 17	
	" " interest	1 63	
	David Evans, " note	16 00	
	" " interest	3 40	
	Sam'l Redman, " note	43 75	
	" " interest	5 65	
	Wm. Staley, " note	20 00	
9	" " interest	5 00	
			106 60

STATEMENT IV—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
1882.			
Feb. 9	Samuel Wood, Va. Military Land, note	$38 55	
	" " interest	6 45	
	A. R. Dugan, " note	25 00	
	" " interest	4 40	
			$74 40
28	Prof. R. W. McFarland, Bursar, winter term bills:		
	Incidental fees $1,277 50		
	Chemical Laboratory fees 220 00		
	Physical " 63 00		
	Stall rent 17 25		
		$1,577 75	
	S. C. Derby, house rent for February	20 00	
	Samuel Wood, balance Va. Military Land, note	6 45	
	J. G. Freeman, Va. Military Land, note	14 00	
	J. R. English, "	76 90	
	" " interest	4 61	
	B. Holton, " note	30 50	
	" " interest	9 50	
			1,739 71
	State Treasury, interest on endowment		1,961 33
March 11	Samuel N. Brown, Va. Military Land, note	10 00	
	" " " interest	10	
	M. C. & L. C. Damarin, Va. Mil. Land, notes	339 73	
	" " " notes	22 37	
	Pres't W. Q. Scott, house rent, Jan. and Feb	70 00	
			442 20
17	James Holton, Va. Military Land, note	11 10	
	" " " interest	18 90	
	E. S. VanMeter, " " notes	42 25	
	" " " interest	7 25	
	M. H. Newman, " " interest	50	
	J. B. McGrew, " " notes (2)	60 00	
	" " " interest	2 90	
	S. A. Bond, " " interest	15 00	
			157 90
31	State treasury, interest on endowment		3,000 00
April 12	Mary J. & J. A. Reed, Va. Mil. Land, note	40 75	
	" " " " interest	4 25	
	Leroy Moss, " " note	10 00	
	" " " interest	1 23	
	Wm. Wykoff, " " interest	20 00	
	J. F. Miles, " " notes (3)	331 20	
	J. W. Purdin, " " note	200 00	
	" " " interest	27 20	
	S. C. Derby, house rent, for March	20 00	
			654 63
27	E. Tucker, Va. Military Land, note	29 62	
	" " " interest	3 68	
	R. H. Justice, " " interest	10 00	
	A. M. Green, " " note	20 00	
	John H. Davis, " " note	6 33	
	" " " interest	67	
			70 30
May 2	John Williams, " " notes	40 00	
	Alfred Kisting, " " note	42 50	
	" " " interest	6 90	
			89 40

STATEMENT IV—Continued.

Date.	From whom received, and on what account.	Amount.	Totals.
1882.			
May 2	Jacob Butler, Va. Military Land, note	$19 88	
	" " " interest	5 12	
	S. C. Derby, house rent, for April	20 00	
			$45 00
6	N. S. Townshend, house rent, one year	300 00	
	W. Q. Scott, house rent, March and April	70 00	
	Henry Oursler, Va. Military Land, notes (8)	305 29	
	" " " interest	93 39	
	Wm. Watkins, " " notes (3)	72 50	
	" " " interest	12 25	
			853 43
18	State treasury, interest on endowment		3,000 00
22	J. F. Miles, Va. Military Land, notes (5)	447 31	
	" " " interest	103 69	
	R. W. McFarland (Bursar) spring-term bills—		
	Incidentals $1,158 00		
	Chem. Laboratory fees 210 00		
	Physical " 63 00		
	Stall-rent 4 00		
		14 35	
			1,986 00
June 10	S. C. Derby, house rent, for May	20 00	
	Michael Hause, Va. Military Land, note	32 36	
	" " " interest	17 64	
	Lafayette Brown; " " sale	7 85	
	Isaac Sole, " " notes (4)	168 92	
	John Williams, " " note, bal	7 46	
	" " " interest	12 19	
	John Liston, " " note	10 00	
			276 42
17	J. F. Miles, " " note	390 39	
	" " " interest	88 29	
	W. H. Newman, " " notes (2)	62 50	
	" " " interest	5 95	
	W. S. Hall, " " notes (2)	52 00	
	" " " interest	3 12	
			602 25
22	Isaac G. Noel, " " note	20 00	
	Chas. A. Barton, " " sales	742 27	
	S. C. Derby, house rent, June	20 00	
			782 27
June 26	S. A. Norton, apparatus sold to students	$198 35	
29	W. Q. Scott, rent for May and June	70 00	
29	Johnson Allen, Va. Military Land, note	35 33	
	" " interest	6 35	
	Bettie Allen, " note	13 50	
	" " interest	1 62	
			$325 15
30	State Treasury, income on endowment		5,000 00
Aug. 5	Alfred McDaniel, Va. Military Land, notes	$74 80	
	" " interest	7 97	
			82 77
Sept. 18	H. M. Kinsely, " notes (4)	$92 66	
	" " interest	14 09	
	Lawrence C. Moon, " note	51 00	
	Robert Bryant, " note	54 00	
	Jas. W. Hall, " note	38 84	
	" " interest	1 49	
			252 08

STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
1882.			
Sept. 23	Salome Cross, Va. Military Land, note (bal.)	$4 80	
	" " interest	7 70	
	M. C. & L. C. Damarin, " notes (13)	646 26	
	" " interest	62 88	
			$721 64
28	State Treasury, income on endowment		4,000 00
Oct. 2	Daniel Brown, Va. Military Land, notes (4)	$78 67	
	" " interest	15 33	
	J. F. Miles, " note	103 90	
	" " interest	14 60	
	John Williams, " note	70 00	
	" " interest	10 62	
			293 12
7	John Liston, " notes (bal.)	$31 75	
	" " interest	22 98	
	Rob't G. Smeltzer, " notes (2)	42 00	
	" " interest	8 00	
			104 73
Oct. 11	Hiram Cooper, " note	$12 62	
	" " interest	7 38	
	J. F. Miles, " note	103 90	
	" " interest	14 90	
			138 80
31	M. D. Hibbs, " note (part)	$32 95	
	" " interest (on 4)	47 05	
	James Copeland, " notes (2)	33 30	
	" " interest	4 95	
	Robert Smith, " note	31 00	
	" " interest	5 90	
	David Evans, " note	16 00	
	" " interest	4 24	
	J. Q. Winterstein, " notes (2)	52 00	
	" " interest	26 00	
	(The last two notes paid by re-sale of the land).		253 39
	State Treasury, income on endowment		4,660 40
Nov. 4	R. W. McFarland, Bursar, fall term bills, viz.:		
	From Incidental fees $1,652 50		
	" Chem. Lab'y fees 265 00		
	" Phys. " " 147 00		
	" stall rent 18 50		
		$2,083 00	
	Walter Quincy Scott, house rent to Nov. 1	70 00	
	S. C. Derby, " "	80 00	
			2,233 00
10	G. C. & Jona. Tener, Va. Military Land, notes	$124 80	
	" " interest	31 20	
			156 00
11	State Treasury, appro'n for expenses of trustees		350 00
	Total receipts, including balance of $4,062.35 on hand November 16, 1881		$50,030 78
	Total disbursements for the year (see statement V. for details)		45,517 37
	Balance, being amount of cash on hand November 15, 1882		$4,513 41

STATEMENT V.

A DETAILED ACCOUNT OF DISBURSEMENTS, BY HENRY S. BABBITT, TREASURER, DURING THE FISCAL YEAR ENDING NOVEMBER 15, 1882.

Date.	No. of Order.	To whom paid.	For what purpose.	Amount.
1881.				
Nov.	902	S. H. Ellis	Expenses of Trustees	$13 85
	903	T. J. Godfrey	"	16 30
	904	J. B. Jamison	"	15 50
17	905	F. Koenig	P'tng. rooms dept. physics	67 50
	906	T. S. & J. S. Negus	Chronometer	400 00
18	907	Robt. Johnson	Kalsomining, &c	62 00
23	908	Jno. T. Short	Salary for November	180 00
	909	Albert H. Tuttle	"	225 00
	910	Alice Williams	Salary $80 (back sal. $30)	110 00
	911	Walter Q. Scott	Salary	275 00
	912	Edward Orton	"	225 00
	913	Sidney A. Norton	"	225 00
	914	N. S. Townshend	"	225 00
	915	R. W. McFarland	"	225 00
	916	S. W. Robinson	"	225 00
	917	T. C. Mendenhall	"	225 00
	918	N. W. Lord	"	100 00
	919	S. C. Derby	"	160 00
	920	W. R. Lazenby	"	200 00
	921	George Ruhlen	"	50 00
	922	Wm. A. Mason, Jr	"	120 00
	923	Michael Dillon	"	83 33
25	924	J. Porter Milligan	Services Prest. and Clerk	15 00
Dec. 5	925	George Rhoades	Care of lawn for Nov	32 75
	926	The Greenwood Mach. Co.	Mechanical Department	1 56
	927	Kilbourne, Jones & Co	"	5 20
	928	S. W. Robinson	"	4 65
	929	J. H. Barcus	Phys. Dept. supplies	1 25
	930	Stitt, Price & Co	Lime for gas, &c	9 70
	931	George Bell	Constructing cistern	22 50
	932	Western Home Journal	Advertising	7 75
	933	Akins & Hampson	Dormitory stove	14 90
	934	S. A. Norton	Chemical Department	3 65
	935	Edward Orton	Freights paid	24 00
	936	Same	Fossils	10 00
	937	Columbus Cabinet Co	Museum tables	46 00
	938	F. C. Ashinger	Carpentry	5 31
	939	John K. McDonald	Plastering	8 50
	940	Wassall Fire Clay Co	Pipe	1 20
	941	A. Carlisle	Lumber	11 75
	942	Jacob Schneider	Bricks	20 65
	943	Forest City Chemical Wks.	Varnish	6 66
	944	City Boiler Works	Materials and labor	4 10
	945	C. S. Amy	Carpenter	15 55
	946	Wm. Halley	Cistern pump	20 00
	947	S. A. Norton	Chemicals	500 00
7	948	L. B. Wing	Expenses Trustees	18 75
	949	N. S. Townshend	Farm work	85 89
	950	Barsch & Lomb Optical Co.	Objectives	31 50
	951	Halm, Bellows & Butler	Desk for Prof. Tuttle	40 50
	952	R. Jones & Son	Instr'm'ts for Prof. Tuttle	33 85
	953	A. E. Angier	Preservg. fld. "	15 75

STATEMENT V.—Continued.

Date.	No. of Order.	To whom paid.	For what purpose.	Amount.
1881.				
Dec. 7	954	A. H. Tuttle	Microphones	25 30
8	955	James B. Jamison	Expenses Trustees	14 75
15	956	Albert Allen	Salary to date	100 00
20	957	David O'Brien	Asst. in Chem. Lab	60 00
21	958	S. A. Norton	Salary for December	225 00
	959	J. P. Milligan	Services in Presidts. room	10 00
	960	W. Q. Scott	Salary for December	275 00
	961	Edward Orton	"	225 00
	962	N. H. Townshend	"	225 00
	963	R. W. McFarland	"	225 00
	964	A. H. Tuttle	"	225 00
	965	S. W. Robinson	"	225 00
	966	T. C. Mendenhall	"	225 00
	967	N. W. Lord	"	100 00
	968	Jno. T. Short	"	180 00
	969	S. C. Derby	"	160 00
	970	W. R. Lazenby	"	200 00
	971	George Ruhlen	"	50 00
	972	Wm. A. Mason, Jr	"	120 00
	973	Alice Williams	"	80 00
	974	Michael Dillon	"	83 33
	975	C. C. Miller	Asst in Latin and Greek	40 00
	976	Belle Swickard	"	40 00
22	977	Minnie O. Scott	"	5 00
26	978	A. D. Rodgers, P. M	Postage	58 96
31	979	H. S. Babbitt, Treasurer	Salary to date	50 00
	980	George Rhoades	Lawn keeper	33 37
1882.				
Jan. 14	981	Siebert & Lilley	Warrant and Record books	13 25
	982	Albert Allen	Express and telegraph	4 10
	983	T. C Mendenhall	Express charges	2 95
	984	J. B. Jamison	Ackdgt. of deeds V.M. lands	2 00
	985	Columbus Transfer Co	Freights	5 94
	986	Kauffman, Latimer & Rising	Phys. Dept	2 39
	987	Lyonsdale Coal Co	151 $\frac{5}{20}$ tons coal	360 09
	988	A. H. Smythe	Book for library	1 80
	989	M. C. Lilley & Co	Swords and equipments	101 75
	990	Jas. W. Queen & Co	Apparatus, $91.60; and supplies, $72.04, Dept. Physics.	163 64
	991	Kilbourne, Jones & Co	Paint brush, "	95
	992	J. M. Stewart	5 carriages for State Offls	$10 00
	993	E. R. Kirk	Work in Dept. Physics	30 00
5	994	Jos. Berger	Sand for gas house	4 20
	995	Peter Emmel	Paintg. in Mechl. Lab	4 13
	996	S. H. Ellis	Expenses Trustees	15 75
6	997	J. B. Jamison	"	16 50
12	998	Midland Telephone Co	Rent to April	25 00
13	999	A. D. Rodgers, P. M	Postage for Pres. Scott	12 36
	1000	J. H. Anderson, Trustee	Exp. to Yelllow Springs	10 00
		New Series.		
20	1	George Ruhlen	Reprs. etc., Ordnance Prop.	43 48

STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
Jan. 25	2	Watler Quincy Scott	Salary for January	$275 00
	3	Edward Orton	"	225 00
	4	S. A. Norton	"	225 00
	5	N. S. Thownshend	"	225 00
	6	R. W. McFarland	"	225 00
	7	A. H. Tuttle	"	225 00
	8	S. W. Robinson	"	225 00
	9	T. C. Mendenhall	"	225 00
	10	John T. Short	"	180 00
	11	N. W. Lord	"	100 00
	12	Samuel C. Derby	"	160 00
	13	W. R. Lazenby	"	200 00
	14	Geo. Ruhlen	"	50 00
	15	Wm. A. Mason, Jr	"	120 00
	16	E. D. Marsh & Co	National Atlas	13 50
	17	Alice Williams	Salary for January	80 00
	18	M. Dillon	"	83 33
26	19	T. J. Hand, Sec'y	Vol. 8 A. J. C. C. Reg	3 75
28	20	A. D. Rodgers, P. M	Postage for catalogue	16 48
Feb'y 1	21	George Rhoades	Lawn-keeper for January	32 66
7	22	F. Koenig	Kalsomining Phys. dep't	6 00
	23	L. B. Wing	Expense Trustees	15 85
	24	Kelley & Co	Plumbing (ordy. repairs)	125 60
	25	F. C. Ashinger	Labor "	6 00
	26	J. K. McDonald	Plastering "	9 75
	27	Walter Q. Scott	Rep. to house "	21 62
	28	N. S. Townshend	Expenses lecture course	27 20
	29	"	Exp. Farmers' Institutes	40 95
	30	John T. Short	" "	6 70
	31	Fauth & Co	Chromograph	329 75
	32	Edward Orton	Exp. Farmers' Institutes	35 05
	33	Wm. R. Lazenby	" "	42 70
	34	N. W. Lord	" "	22 65
	35	C. S. Amy	Work in Mech. dep't	7 40
	36	A. H. Tuttle	Physiological supplies	13 67
	37	Bausch & Lomb	Two microscopes	50 00
	38	Abbott, Stoner & Horn	Hardware, ordinary reps	27 24
	39	T. C. Mendenhall	Department supplies	21 60
	40	S. P. Watt	Map frames	4 00
	41	Nevins & Myers	Letter-heads	19 50
	42	Greenwood Machine Co	Pulley castings Mech. dep't	1 40
	43	W. R. Lazenby	Department supplies	10 85
	44	J. & H. Berge	" (Mining)	63 17
	45	City Boiler Works	Iron scraps	1 35
	46	Patton Manufacturing Co	Potter's clay	90
	47	Asa Gray	Flora Braziliensis	22 00
	48	Kelley & Co	Gas fittings	2 35
	49	R. W. McFarland	Care of gates	11 00
	50	A. E. Foote	N. Y. State Agrl. reports	20 00
	51	John Reynders & Co	Agricultural dep't supplies	32 25
	52	Albert Allen	Express charges	3 10
	53	Daily Times	Advertising	6 15
	54	Col. Transfer Co	Freights	3 53
	55	E. R. Kirk	Carpenter work	80 00
15	56	Belle Swickard	Ass't Librarian	37 50

STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
Feb'y 22	57	Wm. A. Mason, Jr	Salary for February	$120 00
	58	W. Q. Scott	"	275 00
	59	Edward Orton	"	225 00
	60	S. A. Norton	"	225 00
	61	N. S. Townshend	"	225 00
	62	R. W. McFarland	"	225 00
	63	A. H. Tuttle	"	225 00
	64	S. W. Robinson	"	225 00
	65	T. C. Mendenhall	"	225 00
	66	N. W. Lord	"	100 00
	67	John T. Short	"	180 00
	68	Samuel C. Derby	"	160 00
	69	W. R. Lazenby	"	200 00
	70	Geo. Ruhlen	"	50 00
	71	Alice Williams	"	80 00
	72	M. Dillon	"	83 33
	73	Albert Allen	Salary to February 15	200 00
March 1	74	Geo. Rhoades	Lawn-keeper	26 87
9	75	S. H. Ellis	Expense Trustees	23 15
	76	J. B. Jamison	"	17 40
10	77	E. J. Estep	Notarial fees	4 40
	78	Nevins & Myers	Record books	7 25
	79	C. V. N. Beach	Labor	4 50
	80	S. A. Norton	Attending Institutes, exps.	5 00
	81	W. Q. Scott	" "	16 45
	82	A. H. Tuttle	Attending institutes	9 95
	83	T. C. Mendenhall	"	32 28
	84	W. U. Telegraph Co	Telegrams	1 35
	85	S. A. Norton	Books for library	39 21
	86	Siebert & Lilley	Binding books	3 00
	87	Strobridge Lithog'ing Co	Letter-heads & envelopes	46 00
	88	A. H. Smythe	Books for library	112 87
	89	Col. Transfer Co	Freights	8 74
	90	J. W. Queen	Supplie for Physiog. dep't	25 75
	91	C. S. Amy	Repairs Art dep't	4 53
	92	Wm. A. Mason, Jr	Supplies "	28 16
	93	Kaiser & Bro	Repairing roof and gutter	96 21
	94	Einer & Amend	Chemicals	192 51
16	95	Wood & Graham	Insurance on barn	25 00
17	96	Albert Allen, Sec'y	Salary to 15th inst	100 00
22	97	Walter Q. Scott	Salary for March	275 00
	98	Edward Orton	"	225 00
	99	S. A. Norton	"	225 00
	100	N. S. Townshend	"	225 00
	101	R. W. McFarland	"	225 00
	102	A. H. Tuttle	"	225 00
	103	S. W. Robinson	"	225 00
	104	T. C. Mendenhall	"	225 00
	105	N. W. Lord	"	100 00
	106	John T. Short	"	180 00
	107	S. C. Derby	"	160 00
	108	W. R. Lazenby	"	200 00
	109	Geo. Ruhlen	"	50 00
	110	Wm. A. Mason, Jr	"	120 00
	111	Alice Williams	"	80 00

STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
March 22	112	M. Dillon	Salary for March	$83 33
27	113	D. O'Brien	Ass't in chem. laboratory	45 00
29	114	C. C. Miller	Ass't in languages	35 00
30	115	J. P. Milligan	President's clerk	25 00
April 1	116	Geo. Rhoades	Lawn keeper, March	32 18
7	117	Columbus Transfer Co	Freights	16 14
	118	F. C. Ashinger	Labor	6 10
	119	A. H. Tuttle	Material for dissection	12 25
	120	Kauffmann, Lattimer & Rising	Supplies for physical lab'y.	8 30
	121	Hayden & Baker	Iron for dep't supplies	8 92
	122	R. & J. Beck	Supplies for zool. dep't	13 00
	123	Abbott, Stoner & Horn	Shovel and spade	1 75
	124	P. Hayden & Co	Coal for mechanical dep't	5 00
	125	R. W. McFarland	Care of gates, 3 months	10 00
	126	Nevins & Myers	Book paper	6 50
	127	J. M. & W. Westwater	Supplies mechanical dep't	16 75
	128	Wm. Halley	Repairs to Pres't's house	9 95
	129	Edward Orton	Exp. attend. Farmers' Inst.	13 67
	130	Osborn & Co	Supplies zoological dep't	15 37
	131	Lyonsdale Coal Co	$72\frac{1}{2}\frac{6}{0}\frac{2}{0}\frac{0}{0}$ tons coal	194 36
	132	Carlisle & Co	Furniture for hort'l dep't	71 10
	133	Kilbourne, Jones & Co	Supplies physical dep't	2 23
	134	J. P. Milligan	Postage President's room	16 40
	135	Midland Telephone Co	Rent to July	25 00
	136	George Rhoades	Lawn work	16 33
18	137	S. H. Ellis	Trustees' expenses	12 35
	138	J. B. Jamison	" "	19 95
20	139	H. Bancroft, agent	Insur. on dormitories	60 00
21	140	Belle Swickard	Ass't in languages	30 00
	141	Minnie O. Scott	" "	15 00
26	142	Walter Q. Scott	Salary for April	275 00
	143	M. Dillon	"	83 33
	144	Jno. T. Short	"	180 00
	145	Edward Orton	"	225 00
	146	S. A. Norton	"	225 00
	147	N. S. Townshend	"	225 00
	148	R. W. McFarland	"	225 00
	149	A. H. Tuttle	"	225 00
	150	S. W. Robinson	"	225 00
	151	T. C. Mendenhall	"	225 00
	152	N. W. Lord	"	100 00
	153	Samuel C. Derby	"	160 00
	154	W. R. Lazenby	"	200 00
	155	George Ruhlen	"	50 00
	156	W. A. Mason, Jr.	"	120 00
	157	Alice Williams	"	80 00
	158	Albert Allen	Salary to April 15	100 00
	159	Van Harlingen & White	Insurance	23 00
May 3	160	S. H. Ellis	Trustee expenses	11 30
	161	Alston Ellis	"	17 00
6	162	Royce & Pulling	Arms for wind mill	2 90
	163	T. C. Mendenhall	Muslin for screens	5 42
	164	S. C. Derby	Repairs to blackboard	4 69
	165	A. W. Livingstone's Sons	Grass seeds	9 40
	166	J. M. Wright	Hours' work	3 30

STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
May 6	167	Midland Telephone Co	Physical laboratory line	$25 00
	168	Gardner Bros	Gas retorts	53 75
	169	W. Q. Scott	Map and freight	7 18
	170	B. Westerman & Co	Books for library	8 28
	171	Jas. W. Queen & Co	Lantern for dep't history	45 00
26	172	M. Dillon	Salary for May	83 33
	173	Jno. T. Short	"	180 00
	174	R. W. McFarland	"	225 00
	175	W. Q. Scott	"	275 00
	176	Edward Orton	"	225 00
	177	S. A. Norton	"	225 00
	178	N. S. Townshend	"	225 00
	179	A. H. Tuttle	"	225 00
	180	S. W. Robinson	"	225 00
	181	T. C. Mendenhall	"	225 00
	182	N. W. Lord	"	100 00
	183	S. C. Derby	"	160 00
	184	W. R. Lazenby	"	200 00
	185	George Rublen	"	50 00
	186	Wm. A. Mason, Jr	"	120 00
	187	Alice Williams	"	80 00
	188	W. R. Lazenby	Supplies for hort'l dep't	300 00
29	189	S. M. Shedd, agent	Insurance on farm house	8 00
	190	Henry S. Babbitt, Treas.	4½ mos. salary to 15th	150 00
			Postage and rev. stamps	8 50
June 8	191	David O'Brien	Ass't in chemical laborat'y	45 00
	192	T. J. Godfrey	Expense Trustees	22 15
9	193	J. B. Jamison	"	14 00
	194	E. J. Estep	Acknowledging deeds	4 80
	195	J. P. Milligan	Portage for President	7 00
	196	W. C. Mills	Hours' work	3 50
	197	R. W. McFarland	Care of gates	10 25
	198	James Kelley	Lawn keeper	31 60
	199	George Rhoades	Carpenter work	17 50
	200	G. M. Maris & Co	Supplies for mech'l lab	19 73
	201	Nevins & Myers	Paper and print'g for Pres't	29 00
	202	Ohio State Journal Co	Note circulars	3 50
	203	T. C. Mendenhall	Lab'y supplies	13 45
	204	Earhart Printing Co	Bill-heads	6 75
	205	N. S. Townshend	Institute expenses	25 40
	206	E. M. Van Harlingen, Jr	Advertising in Makio	15 00
	207	G. Drobisch	Plants	6 30
	208	Kauffman, Lattimer & R	Alcohol	10 44
	209	W. A. Hershiser	Lumber	15 72
	210	Columbus Transfer Co	Freight and drayage	8 46
	211	Siebert & Lilley	Blank books	17 15
	212	W. Q. Scott	Exs. visiting institutes	47 15
	213	N. E. Lovejoy	Fence posts	21 00
	214	Abbott, Stoner & Horn	Barbed iron wire	43 50
	215	C. L. Needles	Work on wire fence	9 00
15	216	Albert Allen	Salary to date	200 00
17	217	Belle Swickard	Salary as librarian, etc	67 50
	218	R. W. McFarland	Salary for June	225 00
	219	W. Q. Scott	"	275 00
	220	Edward Orton	"	225 00

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
June 17	221	S. A. Norton	Salary for June	$225 00
	222	N. S. Townshend	"	225 00
	223	A. H. Tuttle	"	225 00
	224	S. W. Robinson	"	225 00
	225	T. C. Mendenhall	"	225 00
	226	N. W. Lord	"	100 00
	227	J. F. Short	"	180 00
	228	S. C. Derby	"	160 00
	229	W. R. Lazenby	"	200 00
	230	George Ruhlen	"	50 00
	231	W. A. Mason, Jr	"	120 00
	232	Alice Williams	"	80 00
19	233	M. Dillon	"	83 33
	234	F. C. Ashinger	Carpenter work	6 90
20	235	J. P. Milligan	Ass't President's office	25 00
	236	C. C. Miller	Assistant in Greek	25 00
21	237	S. H. Ellis	Trustees expenses	25 70
	238	T. J. Godfrey	"	15 50
	239	C. A. Barton, agt. Va. M. L.	8 months' salary... $390 00 Expenses..... 292 94	682 94
	240	R. W. McFarland	Bursar and Sup't lawn w'k.	50 00
	241	Jas. B. Jamison	Expenses trustees	27 20
26	242	S. A. Norton	Supplies chem. laboratory	56 24
July 3	243	C. L. Needles	Whitewashing	22 40
	244	James Kelley	Lawn-keeper	35 00
	245	L. B. Wing	Expenses trustees	23 25
	246	Midland Telephone Co	Rent to Oct. 1	25 00
	247	George Rhoades	— days' work	37 00
	248	Columbus Transfer Co	Hacks and horses	25 00
	249	Windsor Atcheson, estate	Bricks	10 62
	250	This order null and void		
	251	Abbott, Stoner & Horn	Hardware	18 92
	252	S. P. Watts	Mounting map	1 50
	253	J. M. Stuart	Carriage hire	12 00
	254	C. S. Amy	Work in library	4 00
	255	R. W. McFarland	Filling diplomas, etc	10 00
	256	Stitt, Price & Co	Lime	1 87
	257	B. Westermann & Co	Books and atlas	12 00
	258	W. A. Mason, Jr	Art dep't supplies	7 45
	259	W. Q. Scott	Postage	37 00
	260	Aston & Huff	Collecting boxes	4 25
	261	W. R. Lazenby	Institute expenses	9 95
	262	E. R. Kirk	Repairing gate	8 25
	263	C. M. Cott & Co	Printing circulars	8 75
	264	A. H. Smythe	Books	16 56
	265	W. S. Devol	Work in hort'l department	15 00
	266	Earhart Printing Co	Printing	19 25
	267	Strobridge Lith. Co	Diplomas	10 00
	268	C. A. Barton, agt	Refunded to Hackworth for Va. M. Land	71 18
	269	Lyonsdale Coal Co	$72\frac{1650}{2000}$ tons coal	173 32
	270	L. B. Wing	Expenses trustees	6 00
Aug. 2	271	James B. Jamison	"	14 00
	272	Alston Ellis	"	16 00
	273	T. J. Godfrey	"	13 00

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
Aug. 11	274	L. D. Myers, P.M	Postage for President	$21 00
12	275	M. Dillon	Salary for July	83 33
	276	J. W. Queen & Co	Induction coil	125 00
15	277	Albert Allen	Salary to date	100 00
21	278	H. F. Booth	Wagon for hort'l dep't	150 00
22	279	L. D. Myers, P.M	Postage for Sec'y	15 00
23	280	A. S. White & Co., agts	Insurance	36 11
31	281	S. H. Ellis	Expenses trustees	13 45
	282	L. B. Wing	"	5 00
Sept. 1	283	T. J. Godfrey	"	16 00
	284	J. B. Jamison	"	19 00
	285	Ohio State Journal Co	Printing circulars	56 50
	286	Myers Bros	Printing	4 00
	287	Columbus Nursery	Evergreens	5 00
	288	George W. Gleason	Geological works	9 00
	289	Rob't Clarke & Co	"Coal and Iron Industries"	11 20
	290	Columbus Transfer Co	Hauling	3 25
	291	Kelley & Co	Gas fitting	3 85
	292	Bresnahan & Shea	Janitor's supplies	33 52
	293	Robert Wood	1st est. frame dwell'g house	498 69
	294	"	" 2 brick residences	437 40
	295	P. Hayden & Son	Castings	17 22
	296	C. Kemmerer	Brick and sand	18 44
	297	James Kelley	Days' work	33 25
	298	Col. Brass & Steam Pipe wks	Crank and pipe	42 18
	299	G. J. Brand & Co	Directory	3 00
	300	Police Commissioners	Services of police	10 00
	301	Albert Allen	Express and telegrams	1 65
	302	Tolelo Blade Co	Adver. contracts	7 50
	303	Enquirer Co	"	7 50
	304	Orebaugh & Brodbeck	"	4 00
	305	Myers & Brickell	"	5 00
	306	Legal Record	"	5 00
4	307	M. Dillon	Salary for August	83 33
	308	Robert Wood	Estimate No. 2 on frame house $450 00; Est. No. 2 on 2 brick houses 1,559 97	2,009 97
	309	John Hazelbaker	Refunded for V. M. Lands	93 72
19	310	James Kelley	Days' work	47 85
22	311	John T. Short	Salary for September	225 00
	312	W. Q. Scott	"	275 00
	313	Albert Allen	Salary to 15th inst	200 00
	314	Sidney A. Norton	Salary for September	225 00
	315	N. S. Townshend	"	225 00
	316	R. W. McFarland	"	225 00
	317	S. W. Robinson	"	225 00
	318	T. C. Mendenhall	"	225 00
	319	N. W. Lord	"	100 00
	320	S. C. Derby	"	225 00
	321	W. R. Lazenby	"	200 00
	322	George Ruhlen	"	50 00
	323	Wm. A. Mason	"	140 00
	324	Alice Williams	"	80 00
25	325	Leader Printing Co	Adv. proposals for houses	5 91
26	326	S. M. Shedd, agent	Insurance	65 00

STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
Sept. 30	327	Robert Wood	Est. No. 3 on 1 frame and 2 brick houses	$1,557 45
	328	M. Dillon	Salary for September	83 33
Oct. 4	329	L. B. Wing	Expenses trustees	5 50
	330	A. H. Smythe	Stationery	4 75
	331	W. Halley	Repairs to pump, etc	9 80
	332	E. B. Armstrong	5 stoves for dormitory	54 20
	333	Halm, Bellows & Co	Table for President	40 00
	334	Columbus Cabinet Co	5 wardrobes for dormitory	65 00
	335	Ohio State Journal Co	Circulars	5 00
	336	Midland Telephone Co	Rent to January 1, 1883	25 00
	337	Columbus Transfer Co	Drayages	1 80
	338	Earhart Printing Co	Certificates	5 85
	339	N. S. Townshend	Expenses to Iowa	34 75
	340	Henry Richter	Cases for flags	65 00
	341	Strobridge & Co	Envelopes	5 50
14	342	David O'Brine	Ass't in Chemistry	30 00
16	343	A. Gardner, jr	Ins. contents main building	59 87
	344	J. W. Lauterback	" "	21 38
	345	Wood & Graham	" "	21 38
	346	S. M. Shedd	" "	64 16
	347	H. Bancroft	" "	64 16
24	348	Robert Wood, contractor	Est. No. 4 on 1 frame, $360 / 2 brick residences, $967.50	1,327 50
25	349	W. Q. Scott	Salary for October	275 00
	350	S. A. Norton	"	225 00
	351	N. S. Townshend	"	225 00
	352	R. W. McFarland	"	225 00
	353	S. W. Robinson	"	225 00
	354	T. C. Mendenhall	"	225 00
	355	N. W. Lord	"	100 00
	356	John T. Short	"	225 00
	357	S. C. Derby	"	225 00
	358	W. R. Lazenby	"	200 00
	359	George Ruhlen	"	50 00
	360	Wm. A. Mason	"	140 00
	361	Alice Williams	"	80 00
	362	M. Dillon, janitor	"	83 33
	363	Columbus Bolt Works		60
	364	Albert Allen, Sec'y	Salary to October 15	100 00
Nov. 3	365	W. H. Miller	Teacher in Phys. Geog'y	25 00
4	366	Robert Wood, contractor	Est. No. 5 on frame resid'ces	504 00
14	367	Albert Allen, Sec'y	Salary to November 16	100 00
15	368	Henry S. Babbitt, Treas.	6 mos. salary to date $200 / Postage stamps 3	203 00
	369	W. R. Lazenby	Appr'n for Horticul. Dept.	250 00
	370	Minnie E. Bird	Ass't Librarian	25 00
		Total disbursements		$45,517 37

Total receipts as per statement IV	$50,030 78
Total disbursements as above	45,517 37
Balance of cash in my hands November 15, 1882	$4,513 41

HENRY S. BABBITT,
Treasurer Ohio State University.

REPORT OF THE FINANCE COMMITTEE.

COLUMBUS, OHIO, *November* 16, 1882.

To the Board of Trustees of the Ohio State University:

We, your Committee on Finance, having this day examined the accounts and vouchers of the Treasurer, and compared them with the records in the possession of the Secretary, do hereby certify that the report of said Treasurer is correct, and that the statements therein contained, truthfully exhibit the condition of the finances of the University for the fiscal year ending November 15, 1882.

Respectfully submitted.

T. J. GODFREY,
ALSTON ELLIS,
S. H. ELLIS,
Finance Committee.

LIST OF EMPLOYES AND COMPENSATION.

Section 7 of the organic act, passed by the Legislature of Ohio, May 1, 1878, requires a list of "the number of professors, officers, teachers and other employes, and the position and compensation of each," to be reported annually.

The following is the list, with salaries attached, at this date:

Walter Q. Scott,	President		$2,750
Edward Orton,	Professor		2,250
S. A. Norton,	"		2,250
Norton S. Townshend,	"		2,250
R. W. McFarland,	"		2,250
Albert H. Tuttle,	"		2,250
S. W. Robinson,	"		2,250
T. C. Mendenhall,	"		2,250
Nat. W. Lord,	"	(conditional)	2,000
John T. Short,	"		2,250
S. C. Derby,	"		2,250
Wm. R. Lazenby,	"		2,000
George Ruhlen,	"	(military)	500
Wm. A. Mason,	Assistant Professor		1,400
Alice Williams,	Instructor		800
Albert Allen,	Secretary		1,500
Henry S. Babbitt,	Treasurer		400
Minnie E. Bird,	Assistant Librarian		125
Jas. P. Milligan,	Clerk to President		75
F. H. Eldridge,	Assistant Professor of Physics		200
M. Suzerki,	Assistant in Physics		100
C. C. Green,	Instructor in Zoology—fall term		100
Horace L. Wilgus,	Instructor in Physiology—fall term		150
Prof. A. C. Hirst,	"	Latin—fall term	150
Geo. W. McCoard,	"	Algebra "	300
A. D. Selby,	"	Physical Geography—fall term	50
W. H. Miller,	"	"	50
M. Dillon,	Janitor		1,000

APPROPRIATIONS.

SECRETARY'S OFFICE, COLUMBUS, O., *Nov.* 13, 1882.

Dr. Henry S. Babbitt, Treasurer O. S. University:

DEAR SIR: The following minor appropriations were made by the Board of Trustees for the fiscal year, 1882, in addition to the appropriation by the General Assembly, as per act of February 13, 1882 ($33,320.80), for the expenditure of the income from the Endowment Fund, for the support and maintenance of the University, to wit:

November 11, 1881.		—Farmers' Institutes	$150 00
"		Military Department	61 88
"		Assistant Teachers, Dep't Latin and Greek	275 00
"		Industrial Art Dep't supplies	40 00
"		Department of Zoölogy	175 00
"		" Agriculture (not to exceed)	150 00
"		" Horticulture	200 00
"		Mining Department supplies	413 40
January 3,	1882.	—Department of Physics	200 00
"	"	Fitting up room for Department of Physics	100 00
March 9,	"	Department History (Oil Lantern)	45 00
"	"	Horticultural Department equipment	550 00
"	"	" " current expenses	400 00
April 17,	"	Chemical Department supplies	500 00
June 20,	"	Books for President's Department	100 00
"	"	" Prof. Derby's "	200 00
"	"	" Library	300 00
"	"	Supplies for Chemical Department	400 00
"	"	Induction coils	125 00
August 1,	"	For advertising	200 00
Total			$4,585 28

FARM DEPARTMENT.

REPORT OF FARM COMMITTEE.

Hon. Jas. B. Jamison, President:

The Farm Committee beg to state that they have examined the reports of the Professors of Agriculture and of Horticulture; and their accounts and vouchers are found correct:

The Board of Trustees has never filled the place of the farm Superintendent, vacated in 1880 by Mr. Thorne, and this committee recommend that Mr. William Brotherton, of Greene county, be offered the place at a salary of six hundred dollars per year. We believe it would be an advantage to the institution if only distinct types of purely bred domestic animals were raised upon the farm, and to this end we ask an appropriation from the general fund that will enable the Farm Committee to keep up the Jersey herd to its present standard, and to add a small number of thorough-bred Short-horn cattle, and other animals of the best sorts, and that the Ohio State University farm be made a source of supply to those who may wish to procure reliable cattle, sheep and swine of approved sorts for breeding purposes. We believe this would, in time, afford a revenue not inferior to the present method. It would advance the interests of live-stock breeders, and bring the University into prominent notice throughout the State. Especially would it furnish the best means of instruction to the students of agriculture in the University. This we believe to be a point of crowning importance. The farm should not be required to be especially a money-making concern, but at all times it should be considered one of the educational appliances of the University. Live stock, feeding, dairying, management of manures, tillage, drainage, grafting, care of fruits, vines and fruit-trees, should each be managed to some extent in an experimental way, making *instruction for students* the primary object.

In other departments chemicals are bought and *wasted*, if you please, to instruct the student. Iron and timber are purchased, and in laboratory and work-shop are broken, twisted, crushed by expensive apparatus, and thrown aside—not to make money, but to teach the siudent the scientific principles involved and the strength of material.

We respectfully suggest, as the wants of the students in agriculture increase, that the farm be brought under requisition to a reasonable extent, and that the sound principle recognized in other departments be applied to this.

LUCIUS B. WING, *Chairman*,
S. H. ELLIS,
J. B. JAMISON.

STATEMENT "A,"

SHOWING WHAT WAS ON HAND AT BEGINNING AND END OF YEAR, WITH PURCHASES, SALES, PRODUCTION AND CONSUMPTION, ETC.

ITEMS.	On hand Nov. 1, 1881.		Bought or expended during the year.		Produced or increased in value.			Consumed or decreased in value.		Sold during the year.		On hand Nov. 1, 1882.	
	Number or amount.	Value.	Number or amount.	Value.	Acres.	Number or amount.	Value.	Number or amount.	Value.	Number or Amount.	Value.	Number or amount.	Value.
Horses	10	$955 00					$35 00			2	$70 00	8	$920 00
Hogs			3	$60 00			165 00			2	20 00	28	205 00
Cattle	50	2,952 00	8	400 00		15	574 50			25	944 90	45	2,851 00
Implements		2,166 00		410 00					50 00		10 00		2,516 20
Corn	1,400 bus.	700 00	¾ bu.	1 50	31	1,600 bus.	960 00	1,542¾ bus.	925 65	57¼ bus.	49 63	1,400 bus.	840 00
Wheat			177½ bus.	190 35	45	1,061 "	1,379 17			1,173½ "	1,502 87	65 "	65 00
Oats	40 bus.	20 00	1½ "	2 62		50 "	25 00	96½ bus.	47 62				
Rye—seed 1881	21½ bus.	15 35						21½ "	15 35				
Beets	1,560 bus.	150 00	2 lbs. seed	1 00	1½	1,000 bus.	200 00	1,405 "	140 50	95 bus.	9 50	1,000 bus.	200 00
Hay	90 tons.	900 00	14 tons.	98 00	30	40 tons.	400 00	67 4-5 tons.	678 00	22 1-5 tons.	297 45	54 tons.	498 00
Millet			1 bu. seed		3½	12 "	96 00	1 bu. seed.	3 00			12 "	96 00
Corn-fodder	560 shks.	112 00				700 shks.	140 00	560 shks.	112 00			700 shks.	140 00
Straw	30 tons.	100 00				70 tons.	280 00	19½ tons.	46 51	10½ tons.	53 49	70 tons.	280 00
Potatoes			24⅝ bus.	41 80	1	218 bus.	164 98	24⅝ bus.	41 80	203 bus.	154 48	15 bus.	10 50
Feed				335 16					335 16				
Milk						9,341 gals.	2,241 92			2,341 gals.	2,241 92		
Clover and grass seed	6 bus.	27 00	13 bus.	25 25		6 bus.	24 00	19 bus.	52 25			6 bus.	24 00
Miscellaneous produce		36 00		157 53			167 80		10 00		318 45		27 38
Labor, total				3,402 94					3,057 49		345 45		
Bills†				709 30					709 30				
Totals		$8,133 35		$5,870 41	112		$6,853 37		$6,224 63		$6,018 14		$8,673 08

(†). This includes material for permanent improvements and experimentation.

REPORT OF FARM MANAGER.

COLUMBUS, *November* 11, 1882.

S. B. Wing, Esq., Chairman of Farm Committee:

DEAR SIR: I herewith submit the Annual Report of the Farm Department of the Ohio State University for the year ending October 31, 1882.

The tabular statement on page 124 presents a view of transactions and results for the year.

The cash receipts of the farm for the year just ended, as shown in the foregoing statement, were $6,018.14. The amount of produce was greatly reduced this year by the transfers made to the Horticultural department. One hundred and twelve acres have been under cultivation; the remainder was in pasture. The sales of farm products for the year amounted to $4,454.47; this is shown by deducting expenditures for stock, seed, feed and produce re-sold from column five of the general statement.

The excess of production above the value of produce consumed, as shown in columns three and four, is $625.74, which is the net earnings of the farm for the year. This sum has been expended in the purchase of stock, in permanent improvements, and in experimental work.

THE DAIRY.

The sales from the dairy amounted to $2,241.92. Almost the whole work of the dairy has been performed by students. The following statement will show the financial results:

STATEMENT B.

Dairy Department of Ohio State University, Dr.

To cost of milking and care	$820 61
To new milk wagon, etc	180 66
For use of horse	60 00
Purchase of stock	50 69
Keeping twenty-six cows twelve months to balance	1,393 46
	$2,505 42

Cr.

By sales of milk	$2,241 92
seven calves sold	34 50
growth of nine calves	63 00
manure of twenty-six cows, at $6 each	156 00
old milk wagon	10 00
	$2,505 42

The above balance gives $53.59½ to pay for the feed of each cow after deducting cost of care.

Cash Account.

The cash account of the farm, as shown by accompanying vouchers, is as follows:

Superintendent to Farm Department, Dr.

To cash receipts from all sources	$6,018 14

Cr.

By cash of ordinary labor	$1,914 79
cash of student labor	1,488 15
cash increase of inventory	870 00
improvements, experiments and expenses	1,597 47
cash on hand	147 73
	$6,018 14

Improvements.

The permanent improvements made during the year are as follows: New spouting upon the barn and upon the farm house; a new force pump in the stock well at barn; a pipe from pump to small pasture and to horse stable; a hose attachment to the pump for the purpose of washing out the dairy stable; also, six Bernard cattle stanchions in the dairy stable, which give satisfaction.

Twenty rods of 3-inch tile were laid across the north-east corner of field number six, north of the college. Two 3-inch tile drains, together amounting to forty-five rods, were cut through the marsh on the south side of the farm; also, a tile drain of fifteen rods in field number two. A 6-inch tile drain, ninety-four rods in length, has been laid from college sewer to run south of the barn.

The rip rap begun last year upon the river bank has been completed; the river frontage has been greatly improved. This work is still in progress.

The walk from the dormitory to High street, along Woodward avenue, has been graveled, and the shade-trees which died last year on the sides of these streets have been replaced.

Some clearing has been done upon the north island, and the land cleared was plowed and planted with corn; the fences of the farm have also been repaired and improved.

A comfortable kitchen has been built to the tenant-house on the north side of the farm. The cost of this, as well as of repairs upon the farm-house, were paid from the fund for general repairs, as will be noticed under the proper head.

Varieties of Wheat.

Forty-five varieties of wheat were sown last fall, upon a piece of bottom land, a repetition of tests of the previous year. Owing to severe frosts in the spring, and the wet weather in the early part of the summer, the test was, in many particulars, unsatisfactory. Comparing the average yields per acre of the bearded red, the smooth red, bearded white and smooth white, the result was as follows:

Bearded red, average of 13 varieties, per acre	$25\frac{1}{16}$ bu.
Bearded white, average of 2 varieties, per acre	$23\frac{1}{2}$ bu.
Smooth red, average of 15 varieties, per acre	$23\frac{1}{8}$ bu.
Smooth white, average of 15 varieties, per acre	24 bu.
Total average yield of 45 varieties, per acre	$23\frac{9}{16}$ bu.

The weight of the same per bushel was as follows:

Bearded red, average weight per bushel, 13 var..... $59\frac{7}{15}$ lbs.
Bearded white, average weight per bushel, 2 var ..... $59\frac{1}{2}$ lbs.
Smooth red, average weight per bushel, 15 var ..... $58\frac{14}{15}$ lbs.
Smooth white, average weight per bushel, 15 var..... $59\frac{8}{15}$ lbs.

	Name of variety.	Grain—bush.	Weight of gr. per bu. el'n'd for seed.	Smooth or bearded.	Color.	Size.
1	Velvet Chaff	27	$64\frac{1}{2}$	B	R	m
2	Rice	27	58	B	R	m
3	White Blue Stem	$22\frac{1}{2}$	$57\frac{1}{2}$	B	R	s
4	American White	21	$59\frac{1}{2}$	S	W	l
5	Tappahannock	24	63	S	W	s
6	Fultz	$19\frac{1}{2}$	61	S	R	m
7	Scott Bearded	$25\frac{1}{2}$	61	B	R	m
8	York White Chaff	21	61	S	W	l
9	Golden Straw	$19\frac{1}{2}$	62	S	W	m
10	Russian May	$28\frac{1}{2}$	$62\frac{1}{2}$	S	R	l
11	Silver Chaff	$28\frac{1}{2}$	$62\frac{1}{2}$	S	W	m
12	Russian No. 2	30	62	S	W	s
13	Rickenbrode	$10\frac{1}{2}$	$59\frac{1}{2}$	S	W	m
14	Heighes' Prolific	21	59	S	R	s
15	Bennett	$28\frac{1}{2}$	62	S	R	m
16	Mammoth Red	27	60	S	R	l
17	White Glass	27	58	S	W	m
18	Champion Amber	21	56	S	R	m
19	Grecian	24	$59\frac{1}{2}$	S	W	s
20	Mediterranean	27	$59\frac{1}{2}$	B	R	l
21	Smith's Improved	21	60	B	W	m
22	Siberian	15	56	S	R	s
23	Yellow Missouri	$16\frac{1}{2}$	57	S	R	s
24	Washington Glass	27	56	S	W	s
25	New Zealand	27	56	S	W	m
26	Red Amber	$22\frac{1}{2}$	$59\frac{1}{2}$	B	R	m
27	German Amber	21	57	S	R	l
28	Lancaster	27	60	B	R	s
29	Travis	$28\frac{1}{2}$	60	S	R	m
30	Treadwell	$25\frac{1}{2}$	59	B	W	l
31	Indiana Swamp	27	58	B	R	s
32	Michigan Amber	24	59	B	R	m
33	McGhee's Red	$25\frac{1}{2}$	58	S	R	l
34	Therr	$16\frac{1}{2}$	59	B	R	s
35	Smith Scott	$22\frac{1}{2}$	$57\frac{1}{2}$	S	R	m
36	Hungarian	$28\frac{1}{2}$	$59\frac{1}{2}$	B	R	l
37	Arnold's Gold Medal	27	56	S	W	m
38	Clawson	27	57	S	W	m
39	Yellow Blue Stem	21	60	S	R	s
40	Egyptian	27	$59\frac{1}{2}$	B	R	m
41	Zimmerman	30	$58\frac{1}{2}$	S	R	l
42	White Eldorado	21	58	S	W	m
43	Finley	$22\frac{1}{2}$	$58\frac{1}{2}$	S	R	m
44	California Blue Stem	24	59	B	R	s
45	Sandomirka	$28\frac{1}{2}$	63	S	W	m

Experiments were also made with wheat to determine the comparative advantage of thick and thin, early and late sowing, and upon drained and undrained land, but owing to the peculiar season, results were unsatisfactory.

Plots were staked off in the spring for the purpose of testing the effect of different quantities of gypsum upon the clover and orchard grass. Owing to the fact that one of the largest fields was transferred to the use of the new Experiment Station this clover field was needed this fall for wheat. No definite results could be obtained; the beneficial effect of the gypsum was, however, quite marked.

About the middle of June corn and potatoes were planted upon a piece of drained marsh on the south side of the farm. The piece was divided into plats, and different amounts of lime were applied to each. The dry weather commenced immediately after this planting, and neither corn nor potatoes came to maturity.

Three varieties of oats were received last spring from the Agricultural Department at Washington. These were marked Washington, New Brunswick and Russian White; a small quantity of Purple Hulless barley was also received. The oats were sown side by side; the New Brunswick rusted badly; the Washington and Russian White were but little affected by rust, the latter was, however, much later in ripening. The purple barley was sown at the same time and yielded at the rate o 35 bushels per acre of very plump, heavy grain.

A plot of Lucern, of two years' standing, was so much injured by the frosts about the 10th of April last, while white and red clover growing near were not affected, that the conclusion appeared to be justified that this plant cannot be relied upon for a crop in Ohio.

The varieties of corn planted upon the farm were Yellow Leaming and American White; both ripened perfectly, and appear to be reliable and excellent varieties.

The experimental work commenced for next year consists of a series of 30 plots of wheat in the north-west field, treated with different fertilizers. Thirty-five varieties are also sown as nearly as possible under the same conditions for the purpose of testing again their relative merits.

N. S. TOWNSHEND,
Superintendent of Farm.

DEPARTMENT OF BOTANY AND HORTICULTURE.

Hon. L. B. Wing, Chairman Farm Committee Ohio State University:

DEAR SIR: I transmit herewith the first annual report of the Department of Practical Horticulture, covering the operations of the years 1881-82.

ORGANIZATION.

At the very beginning of the past college year, efforts were made to effect a definite and distinctive organization of this important division of the new Department of Botany and Horticulture. In a brief preliminary report or prospectus addressed to the President of the University, I made the following suggestions, which will serve to indicate the basis of the present organization:

1. "That the Department of Botany and Horticulture be entirely separate and distinct from the Department of Agriculture. This is absolutely essential to success. Several years of experience in each of these departments, together with pains-taking study and observation of the history of similar departments in different institutions, have fully convinced me of this. I would, therefore, respectfully suggest that at as early a date as practicable an equable division of land, teams, implements, etc., be made, and that each department thereafter keep its own accounts and manage its own affairs independently. This is the only way by which the two departments can work together with satisfaction to themselves or credit to the University.

2. I would recommend that the plat of land lying between the main University building and the President's house—which is now enclosed and not considered as a part of the campus—be devoted to an experimental garden and nursery.

3. That hereafter the experimental fruit-garden be devoted to fruit *alone*, and that no attempt be made to raise vegetables or grain therein.

4. That a portion of the campus in the vicinity of the "lake" be devoted to a botanic garden.

In my judgment, the most essential requisites of success in this department are well-managed fruit and vegetable gardens, a small, but well-stocked nursery of fruit, forest and ornamental trees and plants, and a good botanic garden. Without them the practical operations of Horticulture cannot be illustrated or made familiar.

Aside from their use as a means of instruction, why should not most of the trees, shrubs, and flowers needed to beautify and adorn the grounds be furnished by this department, rather than purchased elsewhere?

The University grounds already contain a fine collection of trees and shrubs, but we should have a genuine arboretum, where *all* varieties that will live in this climate could be found correctly labeled, so that their habits of growth, and value as timber or ornamental plants, could be seen and noted."

The above suggestions embrace at least five distinct divisions, each being a necessary and important means of illustrating the practical operations of the different branches of Horticulture and Botany. These are as follows:

(1). *A Vegetable Garden*—For illustrating the subjects of "vegetable culture" and "seed-growing."

(2). *A Fruit Garden*—For illustrating "fruit culture."

(3). *A Nursery*—For illustrating the propagation of various fruit, forest and ornamental trees, and for supplying the plants needed in the fruit, vegetable and botanic gardens.

(4). *A Botanic Garden and Arboretum*—For illustrating the general subject of systematic and economic Botany, and practical arboriculture.

(5). *Experiment Grounds*—For making such tests and conducting such experiments as could not well be attempted elsewhere.

PREPARATORY WORK.

Inasmuch as this scheme appeared to meet the approval of the Board of Trustees, steps were at once taken to carry it into effect. The land selected for the vegetable garden and experiment grounds was cleared of the crops with which it was partially occupied, some additional draining was done, after which the whole plat was deeply and thoroughly plowed—a portion of it being sub-soiled. In the fruit garden such work, in the way of pruning, cultivation, winter protection, etc., as was needful and could best be done in the fall, was attended to. For the nursery, collections of forest and fruit-tree seeds were made for early spring planting.

The progress made in the different divisions of our work will be briefly treated under their appropriate heads.

VEGETABLE GARDEN.

The past year has not been an altogether favorable one for gardening. The spring was the earliest we have had for years, and the transition from an unusually mild winter was easy and gradual. About the middle of February our well-drained soil was smoking with fermentation, and the fervid warmth of the sun pushed forward the germination of all self-sown seeds, and awoke swarms of insects into life. But the warm weather of the latter half of February and early March was followed by severe and long-protracted rains, accompanied by cold winds and more or less frost, which proved very inhospitable to all early garden crops, and was particularly injurious to our early-blooming fruit plants

HOT-BEDS AND COLD FRAMES.

Early in March a few hot-bed frames were put in place, on the slope just south of the farm-house. In these were sown different varieties of lettuce, cabbage, tomatoes, egg-plant, peppers and other seeds, and in spite of the cold weather that followed, furnished us with a good supply of plants of these important garden vegetables. Celery seed of different varieties was sown in carefully prepared cold-frames.

EARLY CROPS.

A little later we had sown in the open ground numerous varieties each of early peas, beets, parsnips, carrots, salsify, spinach, parsley, radishes and onions. We also planted a dozen or more different varieties of early potatoes. Just the proper time for sowing or planting the above named seeds cannot, of course, be exactly stated. It can be laid down as a general rule, however, that the seeds of all hardy, vigorous plants may be safely sown just as soon as the land is fit to work in spring.

Our practice with these early crops is as follows: The preparatory tillage is thorough and as nearly a perfect seed-bed is formed as is possible. The seeds are sown in drills, and not broad-cast, and are always sown upon a freshly stirred surface. As regards the proper quantity of seed, no definite rules can be given.

As a general thing we seed too thickly, and would reap better results if we should prepare the land better, fertilize it more liberally, and use less seed. At our first and earliest sowings we use a third more seed than is required later. We sow all of our seed in drills or rows, the distance apart varying according to the variety, and the depth depending upon the condition of the soil as to dryness and the size of the seed. When the soil is cold and moist we are liable to err in covering the seed too deeply. When seed had to be sown by hand, the broad-cast system had some recommendation, but it contains many radical defects, and since the introduction of our seed-drills is rarely practiced. The drill system is certainly the more preferable. The distribution and covering of the seed is more equal and perfect, and the subsequent cultivation can be easier and better performed.

LATER CROPS.

Among the later crops were numerous varieties of cabbage, tomatoes, egg-plant, peppers, which we had started in the hot-bed. After transplanting these, we planted eight varieties of sweet-corn, sixteen of beans, and a lesser number of squashes, melons, cucumbers, turnips, etc.

The early peas were followed by cucumbers for pickling, the spinach by late cabbage, and the early potatoes by turnips and celery, making upon so much of the ground two crops in the season.

THOROUGH CULTURE.

In the management of these crops the most economical and effective means of culture known were adopted. Two important principles were kept constantly in view, viz.: (1). To never exceed, if possible, the limit of profitable labor. (2). To have a garden absolutely free of weeds. I had a firm belief in clean culture, and determined to act out that belief. At first it was plain sailing. A careful and thorough preparation of the ground, together with good seed and a favorable season, insured a rapid and nearly perfect germination. For the first few weeks, as row after row of vegetation appeared, showing no sign of "plants out of place," I fancied that our ideal of a "clean garden" was one of easy attainment. But I was sadly mistaken. A little later the enemy was upon us. For weeks we had one long-continued, soaking, drizzling rain, with scarcely a ray of sunshine. Then it was that the weeds came. They came in almost every variety and in countless numbers. For a time it

seemed as though each crop was in a fair way to be overwhelmed. Persistent labor, however, is sure to tell, and by keeping the horse-cultivator and hand-hoe steadily at work, we soon made decided headway against our formidable intruders. In fact, we conquered the weeds, and, with few exceptions, had fairly good crops. The value of thorough cultivation was made so abundantly manifest that few could fail to observe it, and heed the lesson thus taught.

THE FRUIT GARDEN.

The extreme severity of the winter of 1880–81, followed as it was by an equally severe and long-protracted summer drouth, left the fruit garden in a bad condition. Over sixty per cent. of the apple-trees were killed outright, while some of the pears and many of the small fruit-plants suffered a similar fate. Most of these losses were made good by replanting last spring, and the list of varieties was considerably increased.

I sent to New York for the greater part of the apple-trees, thinking that a selection from stock raised in a higher latitude might prove more hardy. At all events, it will be interesting to compare the growth, fruitfulness, etc., of the same varieties of apple-trees grown in Western New York and at Columbus, Ohio. The short experience that I have had in practical fruit culture here in Central Ohio is not reassuring. It shows that our capricious climate is more unfavorable, even to hardy fruits, than that of corresponding or higher latitudes in other states. I do not wish to discourage the cultivation of fine fruit, and would like to see every country home have a small but well-selected orchard and fruit-garden for its own use. Yet, excepting a few favored localities, our best fruits cannot be raised throughout Central Ohio with anything like the success and profit that follows the cultivation of wheat or corn. Fine fruit *can* be grown here at the University, but not with profit or satisfaction, for the soil is not congenial, and the climate is unfavorable.

Of the large fruits we have in our garden, over twenty varieties of the apple, sixteen of pear, nine of cherries, and a small collection of plums, peaches and quinces. The vineyard is small and bore but little fruit the past season. We are preparing for its extension next spring.

Of the small fruits we have some of the best varieties of the strawberry, raspberry, blackberry, currant and gooseberry. I wish to test every variety of these small fruits that merits attention.

OBJECT OF THE GARDENS.

The primary object of the fruit and vegetable garden is instruction. That is, the varieties tested, the methods of propagation, training, pruning, etc., that are employed are just so many means of illustration for the benefit of students. Thus far we have been occupied mainly with pioneer work. We have been trying to make gardens rather than manage them. Time and effort have been spent in the way of permanent improvements. Stumps and stones have been removed, drains laid, and roads built. We have been enriching the soil and killing weeds. Owing to our limited capital we have had to labor to disadvantage, yet the results of the year's work show substantial progress and improvement.

STUDENT LABOR.

Another object accomplished by the gardens is, the opportunity they afford students for doing something in the way of self-support. Many of our students find it necessary to earn money in order to defray, at least, a portion of their expenses. During the spring term quite a large number were engaged at different times, and in various ways, and several worked more or less steadily throughout the whole season. I am happy to state, that with few exceptions, the work was done faithfully and well. There is certainly no feeling opposed to manual labor. It is counted honorable' and the student who joins the labor corps suffers thereby no disrespect. As the condition of the department improves—when there is less pioneer work to do, and the educational features have become more fully developed, the student can scarcely fail to take a livelier interest in the manual work offered by the gardens.

THE NURSERY.

No special argument is needed in support of the proposition that a well conducted nursery is an important and necessary adjunct to the Department of Botany and Horticulture. The practical operations of horticulture can be made familiar in no other way, and any useful system of experimentation requires that we have constantly on hand a good supply of seedling plants and young fruit, forest and ornamental trees. As a step in this direction we have raised the past season quite a collection of seedling fruit and forest-trees. Another year we hope to greatly enlarge and entend this important branch of our work. Recognizing the subject of forest-tree culture as one of vital interest to the people of this State, we should certainly do all in our power to illustrate how cheaply and easily many of our most valuable timber trees may be raised from seed. The varied nature of the University grounds offers locations suitable for extensive and valuable experiments in forestry, and they should be inaugurated just as soon as possible.

BOTANIC GARDEN AND ARBORETUM.

It is my wish to make of the whole University campus a grand botanic garden and arboretum. That is, we should have somewhere upon the University grounds every variety of tree, shrub and hardy herbaceous perennial that will grow in our climate. This work is already begun, and I trust that means may be furnished to carry it on rapidly toward completion. The hardier varieties, at least, could now be well cared for, and by keeping in mind what is to follow they could be so arranged and disposed as to combine ornamental effect with scientific classification. It is eminently desirable that the University campus should not only be attractive from a purely ornamental point of view, but be made to serve a useful purpose as a means of instruction in the Department of Botany and Horticulture.

FLOWERS.

Our flower-beds, although limited in number and extent, were thoroughly made. The poor, sandy, gravelly soil was removed to a depth of two and one-half feet, and its place filled with rich loam, woods-dirt and manure. With the aid of my students

in Floriculture I laid out last spring nine beds varying somewhat in shape and size. The largest of these beds was made in the lawn just south-east of the main building. It was planted in the ribbon style, and stocked with ricinus, cannas, caladiums, geraniums, coleus, centaurea and pyrethrum. The other beds were made near the building bordering upon its front. Two of them were massed with verbenas; one with fancy caladiums; one with different varieties of tea-roses; one with a selection of geraniums; one was devoted to pansies; one to achyranthes, alternanthera, and centaurea; and one contained a miscellaneous collection. These small flower-beds looked well throughout the whole season, and added much to the attractiveness of the grounds.

THE LAWN.

This was mowed three times during the season, and has been kept as neat as was possible with the help and implements at command. Although fairly well seeded, the lawn is, for the most part, in a bad condition. The surface has never been properly leveled, or the soil properly drained and enriched. If this were done and the grass kept closely cut with a one-horse lawn-mower, and the most exposed places top-dressed with well decomposed stable manure every fall, we might have one of the finest lawns in the country. The general appearance of the campus would be greatly improved by removing several old, partially dead and decaying apple-trees. It would likewise be rendered more attractive by making some tasty, comfortable rustic seats and locating them in suitable places.

EXPERIMENT GROUNDS.

For the purpose of making comparative lists of the different varieties of grains, grasses and vegetables, etc., and in order to have specimens for study and samples to select for the museum, a considerable portion of the vegetable garden was taken and divided into small plots. Here we planted over eighty varieties of winter wheat, over forty of grasses and other forage plants, besides other vegetable products too numerous to mention. This proved to be one of the most interesting and instructive divisions of our work, and was closely watched by the students. With the aid of the means appropriated to the State Experiment Station, we were enabled to make many careful observations, and to conduct quite an elaborate series of experiments upon the various crops thus planted. Besides a mere comparison of varieties, we have tested different methods of culture, and various systems of pruning—experimented with fertilizers and numerous insect remedies. We have also done considerable in the way of hybridizing, crossing, and trying to improve varieties by careful selection.

The results of these experiments will be given in full in a soon to be published report of the experiment station. The following circular was prepared at the beginning of the year and quite widely distributed:

"It is the aim of those having in charge the management of the Farm and Gardens connected with the Ohio State University, to make them more distinctively experimental in the future than they have been in the past. The object being not only to give better facilities for instruction to students at the University, but to promote the interests of Agriculture and Horticulture generally throughout the State

"It is our desire to extend to farmers, fruit-culturists, gardeners, and others, useful information and instruction in any and all practicable ways. To this end correspondence is respectfnlly invited. Communications on agricultural and horticultural subjects are always welcomed. All questions will be fairly considered, and, as far as possible, promptly answered.

"Detailed reports of experiments, carefully and conscientiously made, will aid us in our work.

"Seeds that are suspected of being unsound or adulterated, will be carefully examined and tested. Weeds and other plants will be identified and named. New varieties of grains, grasses, fruits, vegetables, and flowers, will be gladly received, and their merits thoroughly tried and reported."

In response to this I have received quite a number of new varieties of fruits, grains, and vegetables, whose merits are now being carefully tested. I could wish that this practice of sending new varieties to the University might become more general.

THE OHIO EXPERIMENT STATION.

This station was established in accordance with an act of the General Assembly, approved April 17, 1882, "for the benefit of the interests of practical and scientific Agriculture, and for the development of the best agricultural resources of the State." Very wisely the Board of Control, to whom was committed the location and general management of the station, located it at the State University, where the work is now being carried on upon the following conditions, viz.:

(1) The station has been given the free use of a field of seventeen acres lying south of the University Campus, which is already plotted, and will soon be devoted wholly to experimental purposes.

(2) The station has the privilege of conducting such experiments upon the University farm, and in the fruit and vegetable gardens, as may be mutually agreed upon by the Board of Control and the Professors in charge of the same.

(3) The station has been granted the free use of a team and such implements and tools belonging to the University as is needful in the execution of its work.

(4) The station agrees to turn over to the University, for the use of team, implements, etc., all products raised, except what is needed for seed, museum purposes, and the like.

(5) The station is given rooms in the Agricultural Chemistry department of the new Chemical Laboratory for storing samples of seed, fertilizers etc.; for making weights, conducting experiments in germination, and work of a similar character.

The Board of Control of the station also agrees to pay a fair proportion, according to the work done, of the salary of a competent Agricultural Chemist, who may be employed by the University to teach this important branch of Chemistry.

ADDITIONAL EQUIPMENT.

I have already, in my report to the President of the University, urged the need of a green-house and laboratory to enable me to do better work in Botany and Horticulture. We need it also as an adjunct to the gardens, nursery, and experiment grounds. Nothing could add more to the usefulness of our practical work than a good propagating house. It is an essential requisite to success.

Again, we sadly need a small building for use as a stable and tool-room for the Horticultural department. This building should contain a small office, a room for threshing and cleaning small quantities of seed, for the storage of fruit-boxes, crates, etc. It should also have a frost-proof root cellar. Such a structure should be conveniently located, and could be built at a very moderate cost.

Another want is a complete assortment of pruning, grafting and budding implements.

EXPENDITURES AND RECEIPTS.

I submit with this report a summary of the receipts, expenses, and inventory of the department. From this it will be seen that it has not been a great burden to the treasury of the University. Regarding instruction and education as the primary object of my labors, I have made no attempt to do a commercial business, and the success of the department cannot be estimated in dollars and cents. Commencing the year without any equipment whatever, with no propagating houses or suitable implements, except what we could borrow or hire, the gardens have paid as well financially as any reasonable person could expect or wisely desire.

OUTSIDE WORK.

During the year I attended and took part in eight Farmers' Institutes, held in different parts of the State. I also attended, during the winter vacation, the annual meetings of the Ohio, Indiana and New York State Horticultural societies, beside several county society meetings. In the spring I attended the National Forestry Congress at Cincinnati, and during the summer vacation visited the different State Experiment Stations, the State Universities of Michigan, New York and New Jersey, besides attending the meeting of the American Association for the Advancement of Science at Montreal. In this way I not only formed many valued acquaintances, but gained many new ideas, which can scarcely fail to be of signal use in my present work. I endeavor to improve every opportunity to meet our farmers and fruit-growers. I wish to make their acquaintance, to keep in sympathy with them and to get them interested in our work at the University. I know that effort in this direction results in good, and I am glad to undertake it whenever I can leave without neglecting my regular University duties. Besides this work my correspondence makes great demands upon my time. I have many letters to answer, containing inquiries about fruits, flowers, vegetables, weeds, insects, fertilizers, etc., etc.

All such questions are fairly considered, and, as far as possible, promptly answered. If any have failed to receive the attention they deserve, it was simply because I could not command time to attend to them.

ACKNOWLEDGMENTS.

I wish to express thanks to the many friends who have contributed to the efficiency of the Department by donations of seed, museum specimens, implements, etc. Everything received has been fully appreciated, although scant acknowledgments have too often been made.

I cannot close this report without expressing my gratification at the harmony and good-will that has existed between this and the other departments of the University.

We have borrowed from each other, and worked and counseled together all with the utmost good feeling. If there exists any lack of confidence, I am not aware of it, for I cannot now recall a single unfriendly or ungenerous act.

Respectfully submitted.

WM. R. LAZENBY,
Professor of Botany and Horticulture.

Ohio State University, November 14, 1882.

Statement of the aggregated receipts and expenditures of the Horticultural Department of the Ohio State University for the year ending November 10, 1882:

RECEIPTS.

Cash received for appropriation	$700 00
Cash received for products sold	476 47
Total	$1,176 47

EXPENDITURES.

Labor of Foreman and Farm Department	$353 40
Labor of students	211 71
Team, wagon, implements, tools, etc	454 35
Fruit-trees, seeds, flowers, etc	119 67
Total	$1,139 13
Total receipts	$1,176 47
Total expenditures	1,139 13
Balance on hand	$37 34

WM. R. LAZENBY.

RECORD OF PROCEEDINGS

OF THE BOARD OF TRUSTEES OF OHIO STATE UNIVERSITY.

COLUMBUS, OHIO, *November* 10, 1881.

Trustees met at 10 o'clock A.M.

Present - Messrs. Anderson, S. H. Ellis, Godfrey, Jamison and Wing.

The minutes of the previous meeting were read and approved.

The Executive Committee presented the report of their proceedings since the June meeting of the Board.

The Farm Committee made a verval report touching the present condition of affairs, and asked time to present a formal report.

The report of the Board was presented and read by the Secretary.

The reports of the President, and other members of the Faculty, to the Board, were presented and read by President Scott.

On motion, the reports were received and referred to the President of the University, and to the Secretary of the Board to revise, and arrange for publication, and presentation to the Governor.

Permission was granted to Dr. Townshend to attend the Woolgrowers' Convention in New York during the latter part of November.

Letters were read from Hume & Williams, of Butler county, concerning the discovery of a small tract of land in Brown county, and the Secretary was instructed to inform them that one-third the net proceeds would be allowed for the discovery, after said land had been surveyed, appraised and sold. S. H. Ellis was appointed a committee of one to take charge of the matter, with full power to act for the Board.

The following resolution was offered, viz.:

Resolved, That the resolutions passed January 5, 1881, concerning a daily assemblage of the students of the University, are hereby re-affirmed, and, that in addition thereto, the Board hereby recommends the reading of the Scriptures (without comment) and prayers, at the discretion of the President of the University, as part of said exercises. The yeas and nays being called for, the resolution was adopted by five yeas and no nays.

A recess of the Board was taken until 1 o'clock P.M.

On re-assembling, Mr. C. E. Thorn appeared before the Board and presented his report as farm manager, which was referred to the Farm Committee to report back the next day.

Capt. C. A. Barton presented the report of his agency in the management of the Virginia Military Lands, whereupon the Secretary was instructed to pay his salary to November 1, 1881, and expenses as per bill presented, by drawing his warrant on the Treasurer.

On motion of Mr. Godfrey, it was

Resolved, That Captain Barton's settlement with John Colin is hereby approved, and the Treasurer of this Board is requested to surrender to said Colin the note now held for about $11.00, and that said Barton is authorized to settle with George W. Hackworth and William Hackworth concerning loss in lines of lands, on the best terms possible.

H. S. Babbitt presented his report as Treasurer, which, after reading, was referred to the Committee on Finance to audit and report during the session of the Board.

Ordered, That the income of the Endowment Fund (so-called) held in trust by the State, and all income from whatever source not otherwise specficially appropriated, be, and is hereby appropriated for the maintenance and support of the University for the ensuing fiscal year, and for such other purposes, incident thereto, as the Board of Trustees may, from time to time, determine; provided, that the use of the income ($20,547.00) of so much of the fund ($342,450.80) as was derived from proceeds of the land scrip donated by Act of Congress, July 2, 1862, be limited to the restrictions of the second clause of Section 5 of said Act of Congress.

A recess was taken.

November 11, 1881.

Board met at 10 o'clock A. M.

On motion, duly carried, Capt. C. A. Barton was employed as agent for the sale, etc, of the Virginia Military Lands, at the rate of $50.00 per month until the 1st of January, 1882; and, after that time, at a reasonable compensation for services required of him.

Ordered, That the appropriation of June 19th, 1880, for a model of the horse, is hereby rescinded.

Ordered, That $150 be, and is hereby appropriated, to defray the traveling expenses only, of Dr. Townshend, Prof. Lazenby, and other Professors, in attending Farmers' Institutes.

On motion, the election of Officers of the Board for the ensuing year was proceeded with, whereupon,

James B. Jamison was elected President of the Board.
James H. Anderson was elected Vice President of the Board.
Albert Allen was elected Secretary of the Board.
Henry S. Babbitt was elected Treasurer of the Board.

EXECUTIVE COMMITTEE.

J. H. Anderson, L. B. Wing, and T. J. Godfrey.

FARM COMMITTEE.

L. B. Wing. S. H. Ellis, and James B. Jamison.

FINANCE COMMITTEE.

T. J. Godfrey, S. H. Ellis, and Alston Ellis.

The Secretary was instructed to have the bond of the Treasurer executed and filed.

The following amendment to the By-Laws was offered and passed:

"Amend Section 1 by inserting after the word 'President,' the words 'Vice President,' and amend Section 8 by adding the following:

'In the absence of the President, the Vice President shall perform all the duties of the President.'"

Messrs. Anderson and Godfrey were appointed a committee to report on raising the salary of Alice Williams, Assistant in the Department of Modern Languages.

The Farm Committee made the following report:

Your Farm Committee respectfully report that we have carefully examined the accounts and vouchers of C. E. Thorn, late Farm Manager, and find them, in all respects, full and correct, and recommend that they be approved by the Board.

(Signed) JAMES B. JAMISON, S. H. ELLIS, T. J. GODFREY, } *Farm Committee.*

The report was approved.

Ordered, That $61.88 be, and is hereby appropriated, to make good the deficiencies in the property, under the control of the Military Department, belonging to the Ordnance Department of the United States, since the same came into the possession of the University.

Ordered, That $275 be, and is hereby appropriated, to pay assistant teachers in the Department of Latin and Greek during the present collegiate year.

Ordered, That $40 be appropriated for supplies in the Department of Industrial Art, and $175 in the Department of Zoölogy.

Ordered, That a sum not to exceed $150 may be expended by Dr. Townshend in the purchase of models and materials for his department.

Ordered, That a sum not to exceed $200 may be expended by Prof. Lazenby in equipping his department, subject to the approval of the Executive Committee.

Resolved, That the matter of putting shutters on Profs. Tuttle's and Lord's lecture rooms be referred to the Executive Committee, with the power to act, as well as the removal of cases and tables in the Physical Department.

Resolved, That the employment of Newton M. Anderson in the department of Physics, and W. K. Cherryholmes in the department of Zoölogy, as assistant teachers, without compensation, is hereby authorized.

Resolved, That the division of land and implements between the Horticultural

and Agricultural Departments be referred to the Farm Committee, with full power to make the same.

On motion of Mr. Wing,

Resolved, That each Professor be required to furnish to the Secretary before the close of the present collegiate year, a full and complete inventory of all apparatus or equipment of any kind belonging to his respective department, and annually thereafter, a list of all additions or losses in such outfit as may have occurred; and that the same be recorded and kept by the Secretary, in book form, for reference.

On motion, it was

Resolved, That the application of Lieutenant Ruhlen for the better equipment of the officers of the Military Department by the substitution of belts and shoulder straps, and the repair of the swords, be and is hereby referred to the Executive Committee with power to act.

The Committee, to which was referred the matter of Alice Williams' salary, made a report recommending its increase to $800 for the full collegiate year. The report was approved.

Resolved, That the matter of improving and repairing the Janitor's house, be referred to the Executive Committee, and that any new distribution of class or lecture rooms be postponed until next meeting of the board.

The report of the Farm Committee was presented and approved.

The Finance Committee submitted the following:

"Your Committee to whom was referred the report of the Treasurer with vouchers, would report that we have examined the same in connection with the certificates and orders of the Secretary, and they are hereby approved.

(Signed)

T. J. Godfrey, }
S. H. Ellis, } *Financial Committee.*

On motion,

Ordered, That there be appropriated for supplies for the Mining Department, four hundred and thirteen and $\frac{40}{100}$ dollars, being the amount undrawn of the appropriation made by the General Assembly of Ohio, April 16th, 1880, and the Secretary is directed to draw his order upon the Auditor of State for the above sum, and certify the same into the treasury for disbursement, subject to the direction of the Executive Committee.

Jas. B. Jamison, *President.*

Columbus, Ohio, *January* 3, 1882.

At a called meeting of the Board for 10 o'clock A. M., January 3d, the following members were present: Messrs. S. H. Ellis, Anderson, Godfrey, Jamison and Wing.

The minutes of the previous meeting were approved.

The Executive Committee presented a report of their proceedings, and the same was approved. The Secretary presented a copy of the estimates for the current year, furnished by the Auditor of State, which was duly considered and adopted.

A recess was taken until Thursday, January 5th, 9 oclock A. M. The Board, on reassembling, was addressed by Mr. W. R. Parsons, of Worthington, as a committee of one from the Jersey Cattle Breeders' Association, requesting that the Board make arrangements at the University farm to have reliable tests of the relative production of milk and butter of any pedigreed breeds, of dairy cows or their crosses which might be furnished by the owners of such cows. The matter was referred to the Farm Committee, with power to act.

The Secretary was instructed to purchase, from time to time, as published, any additional volumes of the American Jersey Cattle Club Register to complete the series already on hand in the library.

On motion,

Ordered, That the sum of $200 be, and the same is hereby appropriated for the purchase of supplies for the department of Physics during the full collegiate year.

Ordered, That the Secretary draw his warrant for the payment of postage for the distribution of the annual catalogue by the President and Faculty of the college, whenever the same is necessary.

On motion, it was

Resolved, That the preamble and resolution, passed by the Board of Trustees February 25, 1881, in relation to the claims of the State of Ohio against the General Government for the location of land warrants, be and the same is hereby rescinded; and, if any appointment of an agent, as named therein, has been made by the President, the same is hereby revoked.

The Treasurer presented a schedule of all notes due the University on account of sales of Virginia Military Lands, now in his hands, and the same was ordered to be filed.

Ordered, That the sum of $100 be, and the same is hereby appropriated for fitting up a basement room for the use of the Department of Physics, to be expended under the direction of the Secretary.

On motion, Mr. Godfrey was appointed a committee of one to attend to the collection of a claim against F. M. Beebe.

A full conference was held with Capt. Barton, agent for the sale of Virginia Military Lands, concerning various matters relative to said lands, the character of the notes, and the best method of collecting them.

Capt. Barton was continued as agent of the Board at the rate of $50

per month from January 1st to April 1st, and at the rate of $40 per month from April 1st to July 1st, 1882.

Messrs. Godfrey and Jamison were appointed a committee to confer with the Attorney-General concerning any legal hindrance to a daily Chapel service at the University, and report the opinion of said Attorney-General to the Secretary to be spread upon the minutes of this meeting.

The following communication was received from Attorney-General Nash:

ATTORNEY-GENERAL'S OFFICE, *January* 10, 1882.

Hon. T. J. Godfrey and Hon. Jas. B. Jamison, Committee of the Board of Trustees of the Ohio State University, Columbus, O.:

GENTLEMEN: I have received and carefully considered yours of the 4th inst. You state that on the 15th day of January, 1881, the Board of Trustees of the Ohio State University adopted the following resolutions:

"1. *Resolved*, That the President and Faculty of Ohio State University are hereby instructed to arrange for holding, daily, a general meeting of the students in the University Chapel.

"2. *Resolved*, That the nature of the exercises and the time of holding the same, shall be matters under the control of the faculty."

That on the 20th day of January, 1881, it suspended its former action, and that afterwards on November 10, 1881, it adopted the following resolution:

"*Resolved*, That the resolution passed January 5, 1881, concerning a daily assemblage of the students of the University, are hereby re-affirmed; and that in addition thereto the Board hereby recommends the reading of the scriptures (without comment) and prayers, at the discretion of the President of the University, as part of said services."

You ask, "Is there any legal hindrance to the carrying out of the above resolutions, and especially the recommendation contained in the last resolution?"

The Legislature has placed the management of the Ohio State University exclusively under the control of the Board of Trustees, and I think the resolutions adopted, and recommendations made by the board and above recited, are clearly within the scope of its authority. I believe that in this opinion I am sustained by the case of the Board of Education of the City of Cincinnati vs. Minor et al., 23rd O. S. R., page 211.

Very truly yours,

(Signed) GEORGE K. NASH,
Attorney-General.
J. H. ANDERSON,
Vice-President.

Board adjourned.

COLUMBUS, OHIO, *March* 9, 1882.

At a called meeting of the Board of Trustees, held this day at the office of the Secretary, Messrs. Anderson, S. H. Ellis, Godfrey and Jamison were present.

The President, Mr. Jamison, was authorized to re-insure the farm-barn.

Ordered, That $45 be appropriated by the board for the purchase of an Oil Lantern, for the use of the Department of History and Philosophy.

Ordered, That the Secretary draw his warant on the Treasurer for any deficiencies in the Professor's expenses in attending Farmers' Institutes, not provided for in the appropriation for this purpose, when the bills shall have been approved by the Executive Committee.

Ordered, That the sum of five hundred and fifty dollars be, and the same is hereby appropriated for the purchase of a team of horses for the Horticultural Department, and for such other equipment in the way of tools, seed, plants, trees, etc., as is set forth in the report of the Professor of Horticulture and Botany, as needed for the use of the same. All bills or accounts for these purposes are to be approved by the Chairman of the Farm Committee for payment.

Ordered, That the sum of $400, subject to the order of the Chairman of the Farm Committee, be advanced to the Farm Committee to pay current expenses of the Horticultural Department, labor, etc., until such time as the proceeds, arising from products of horticultural productions sold, will enable said committee to cover the above amount back into the treasury.

Ordered, That all legislative appropriations which may be made during the present session of the General Assembly be placed under the control of the Executive Committee, with authority to take all legal and necessary steps to carry out the objects for which said appropriations may be made; and upon their order the Secretary shall draw his warrant on the Auditor of State for the payment of all legitimate bills or accounts properly payable from any of said appropriations for whatsoever purpose made.

Prof. McFarland was authorized, with the concurrence of Prof. Lazenby and President Scott, to mark out the line of the dividing fence between the campus and the experimental vegetable grounds lying east of the college, and the separation of the two by a barbed wire fence.

Messrs. Godfrey, Sec'y Allen, and Profs. McFarland and Lazenby were appointed a committee to locate the fence marking the boundary line of the campus south of the present wagon entrance to the college from High street.

(Signed)

J. H. ANDERSON, *Vice-President.*

COLUMBUS, OHIO, *April* 17, 1882.

At a called meeting of the Board of Trustees the following members were present at the hour of meeting, 2 o'clock P. M.: Messrs. Wing, Jamison, Alston Ellis, Anderson and Godfrey. A communication was presented by President Scott from Prof. Norton, asking for an appropriation for supplies for his department, whereupon it was

Ordered, That the sum of $500.00 be and the same is hereby appropriated for the purchase, in Europe, of supplies for the Chemical Department during the session of 1882-83.

A communication was read from Prof. Tuttle, asking leave of absence for one year to perfect himself more fully for the work in his department. After hearing Prof. Tuttle, and duly considering the matter in its bearing upon the interest of the University, the Board decided not to grant the request.

The insurance of the dormitories, previously ordered by the Executive Committee, was approved.

The Board having visited the University and looked over the grounds, with the view of locating the Chemical Laboratory, spent the evening in considering the site and design of the proposed building.

TUESDAY MORNING, *April* 18, 1882.

The Board, upon reassembling, decided—

That the Chemical Laboratory be located north-east of the main University building with the front south, and at such distance from the other buildings (hereafter to be determined) as may seem best, for purposes of security against fire and for general architectural effect.

On motion, it was agreed—

That the building should be two stories in height with a basement reaching 120 feet from the eastern end of the building, under the main body of the laboratory, and having an elevation of eight feet to the ceiling under the first floor.

On motion,

Resolved, That J. T. Harris & Co., architects, be instructed and requested to have ready by the second day of May next, such plans, drawings, specifications and estimates of the Chemical Laboratory as will be necessary to meet all legal requirements relating to public building previous to publication of proposals for the erection of the building.

On motion,

Resolved, That the Board adjourn to meet in Columbus on Tuesday, May 2, 1882, at ten o'clock, A. M.

(Signed)

J. H. ANDERSON, *Vice-President.*

COLUMBUS, OHIO, *May* 2, 1882.

The Board met pursuant to adjournment at 10 o'clock A.M.

Present—Messrs. Anderson, Alston Ellis, S. H. Ellis, Godfrey and Wing.

The minutes of the last three meetings were read and approved.

Mr. Godfrey, as a committee of one, made a verbal report on the case of F. M. Beebe.

J. T. Harris, architect, appeared before the Board with plans, specifications, and estimates for the Chemical Laboratory. After considering the same, the Board, by a unanimous vote, adopted said plans, specifications, and estimates, and authorized the Vice-President, in the absence of the President, to approve the same with his signature. The Secretary was ordered to present a copy of the same to the State officers designated by law for their approval, and to advertise for proposals to build said Laboratory, according to law, and to fix the day for opening any and all bids received, on Thursday, June 8, 1882, between the hours of 10 and 12 A. M. The Secretary was also authorized to furnish printed blank forms of proposals to the architect, for the use of bidders.

The Board then proceeded to the University, and selected as a site for the Chemical Laboratory, the following, viz.:

The south-west corner of the building to be located at a point one hundred feet distant from the main east wall of the Mechanical Laboratory, and the south front of the building on the same line (due East and West) with the front of the Mechanical Laboratory.

On re-assembling at the office of the Secretary, the following resolution was passed:

Resolved, That J. T. Harris, architect, be authorized to prepare and present to the Board on the 8th of June next, the plans, specifications, and estimates of four residences, to be built on the grounds of the University, not to exceed, in cost of construction, an aggregate of $14,000.00.

A communication from S. Kendrick to C. A. Barton, relating to compensation for the discovery of Virginia Military Lands, was read and laid on the table until the next meeting of the Board in June.

Messrs. Ohmer, Mix, and Chamberlain, members of the Board of Control of the Experimental Station, appeared by invitation before the Trustees, and, after a general conference between the respective boards, it was agreed to assign for the exclusive use of the Experimental Board during this year, a certain portion of land lying east of the University building, designated by them as suitable for the purpose contemplated, and now known as the experimental vegetable garden plot. Assurances

were tendered them by the Trustees that every reasonable facility that the University could offer them in the prosecution of their work, would be afforded.

Ordered, That the Secretary of the Board of Trustees of the Ohio State University be, and he is hereby authorized to draw his warrant on the Auditor of State for the payment of all bills or accounts properly payable from any of the several legislative appropriations for the Ohio State University, made during the last session of the General Assembly, whenever the same shall have been approved by the Chairman of the Executive Committee, or two members thereof, or by the President of the Board.

On motion, the Board adjourned to meet on Thursday, June 8th, at 9 o'clock A.M.

(Signed) JAS. B. JAMISON, *President.*

COLUMBUS, O., *June* 8, 1882.

Board met at 9 o'clock A.M.

Present—Messrs. Anderson, S. H. Ellis, Godfrey, Jamison and Wing.

The minutes of the previous meeting were read and approved.

On motion of Mr. Ellis, the action of the Board, at their meeting on April 17, 1882, was reconsidered, and leave of absence for one year, without pay, was granted to Prof. A. H. Tuttle.

Ordered, That the bill of expenses, amounting to $47.15, incurred by President Scott in his recent visit to eastern colleges be paid.

The proposals for building the Chemical Laboratory were duly opened at the time designated in the published notice. It was found that the bid of Clark & Fahey, of eighteen thousand seven hundred and fifty dollars ($18,750), was the lowest and best for the interest of the State. The Secretary and Architect were instructed to draw up the contract with said parties, and to insert a forfeiture of $10 per day for each day that the building remains incomplete after December 1, 1882, and to present the same for approval to the Attorney-General, and, subsequently, to file the approved contract with the Auditor of State.

On motion, it was

Resolved, That J. T. Harris, Architect, in consultation with Judge Anderson, be instructed to prepare plans, estimates, and specifications for three residences of different styles and cost, not exceeding in the aggregate $12,000, and to present the same at the next meeting of the Board.

Prof. McFarland was intrusted with the construction and management of grounds for the athletic sports of students.

The Secretary was authorized to issue proposals for furnishing the University with the annual supply of coal, the bids to close Monday, June 19, 1882.

J. H. Anderson was empowerd to make such arrangements for holding the commencement exercises on the campus as circumstances would justify in his judgment.

The Board adjourned to meet June 20, 1882, at 8 o'clock A. M.

(Signed) JAS. B. JAMISON, *President.*

COLUMBUS, O., *June* 20, 1882.

The Board met at 9 o'clock A. M.

Present—Messrs. Anderson, Godfrey, S. H. Ellis, Jamison and Wing.

The minutes of the previous meeting were corrected and approved. Mr. Harris, Architect, appeared before the Board with plans, estimates and specifications for four residences, numbered one, two, three and four. After careful examination of the same, the Board approved them, and instructed the Architect to file with the Auditor copies of said plans, etc., after the same had been approved by the proper State officers.

The Secretary was instructed to advertise for bids for the building of one or more of each kind, and to fix the 31st day of July, noon, as the time for closing the bids.

Prof. Mendenhall was granted the privilege of placing the large chronometer under the care of Mr. Tress, in his store, during the vacation.

Bids for supplying from 500 to 800 tons of coal to the University during the next college year were opened, and the contract was awarded to the lowest bidder—the Ohio Coal Exchange per W. B. Brooks & Son, at $2.05 per ton, provided that a satisfactory bond for the performance of the contract is offered.

The reports of Prof. McFarland, as Bursar and Lawn Superintendent, were received and approved.

After a recess the Board met at the University, when the following students of the University were recommended by the President of the Faculty for the degrees named, which were duly conferred:

For the degree B.A.—
Willis F. Fay, Franklin county, Ohio.
Irvin Linson, Greene county, Ohio.

For the degree B.Sc.—
William W. Donham, Clermont county, Ohio.

Oliver L. Fassig, Franklin county, Ohio.
Sioux Glover, " "
Horace L. Wilgus, " "
John A. McDowell, " "

For the degree M.E.—

Frederick Keffer, Cuyahoga county, Ohio.
David O'Brine, Franklin county, Ohio.

The present Faculty of the University were re-elected at the former salaries, excepting those of Professors Derby and Short, which were advanced to $2,250 each, and that of Prof. Mason to $1,400.

The following "assistants" were appointed to teach in the departments named, to wit:

C. C. Green, Elementary Zoölogy, fall term, salary	$100 00
H. L. Wilgus, Elementary Physiology, fall term, salary	150 00
N. W. Anderson, Department of Physics, one year, salary	300 00
David O'Brine, " Chemistry, one year, salary	300 00
James P. Milligan, President's Clerk, salary	75 00

Ordered, That one hundred dollars be appropriated for the purchase of such books as the President may select for his department.

Ordered, That $200 be appropriated for the use of Prof. Derby, in the purchase of books for his department.

Ordered, That $300 be appropriated for the purchase of books for the library.

The Secretary was instructed to tender Silas Martin, artist, the thanks of the Board for the excellent portrait in oil of Prof. Justus Liebig presented by him to the University, and to have the same appropriately framed.

On motion of Mr. Anderson, it was

Resolved, That Prof. Edward Orton, former President of this University, and President Walter Q. Scott be solicited for their portraits, to be placed in the President's office at the University.

The Board then adjourned until 8 o'clock A.M. June 21st.

Board met pursuant to adjournment.

On motion of Mr. Godfrey, Dr. Townshend was requested to attend the convention of agricultural professors at Ames, Iowa, and to invite on behalf of the Board, said convention to hold some future sessions at this place.

The Secretary was instructed to pay Dr. Townshend's expenses incurred in attending said convention.

Assistant Engineer U. S. Navy, F. H. Eldridge, appeared before the Board, and presented his order from the Secretary of the Navy detailing

him as Professor in the Ohio State University. The order was properly acknowledged, and on motion of Mr. Wing, it was

Resolved, That the Board accepts with pleasure the assignment of F. H. Eldridge, Assistant Engineer U. S. Navy, for duty as a Professor in the Ohio State University; and that he be requested to report to the Faculty of the University for the adjustment of his work as instructor at the beginning of the next academic year.

Ordered, That $400 be appropriated for the home purchase of chemicals for the Department of Chemistry.

Ordered, That the unexpended balance for supplies for the Chemical Department, of last year, be appropriated for the purchase of induction coils.

On motion, Captain C. A. Barton was authorized to settle with G. W. Hackworth, John Hazlebaker, and Jones & Newcomb, by paying to each the balance paid by them severally to the University, and fifty per cent. additional. Capt. Barton presented a statement showing the amount collected on notes and from cash sales, with expenses incurred since his last settlement in November, 1881. Whereupon the Secretary was instructed to settle with him according to said statements, and also to pay his salary to July 1, 1882.

Mr. Godfrey was authorized to enter into a contract with Samuel Kendrick, for the discovery of lands in the Virginia Military Survey, upon the basis of thirty-three per cent. of net proceeds therefrom, to go to said Kendrick, such contract to be limited in duration to one year from this date.

On motion, C. A. Barton was continued as agent of the board for these lands at $40 per month until November 15, 1882.

The board then adjourned to meet August 1, 1882, at 9 o'clock A.M.

COLUMBUS, OHIO, *August* 1, 1882.

The board met at 9 o'clock A.M.

Present—Messrs. Jamison, Wing, Godfrey and Alston Ellis.

The bids for building three private residences on the college grounds were then opened.

Bids were offered by Messrs.

Clark & Fahey, on Plan	No. 1,	$4,540;	No. 2,	$5,134;	No. 3,	$6,400;	No. 4,	$5,900.
Powell & McDonald,	"	4,055;	"	4,590;	"	5,780;	"	4,875.
George W. Gibson,	"	4,510;	"	$4,710\frac{52}{100}$;	"	$6,033\frac{63}{100}$;	"	$4,747\frac{63}{100}$.
Robert Wood,	"	4,217;	"	4,524;	"	5,700;	"	4,800.

On motion of Mr. Ellis, the bids of Robert Wood for two buildings of Plan No. 2, and one of Plan No. 4 (frame)—the two of Plan No. 2 at $4,524 each, with attic stairs and floor, and No. 4 at $4,800, were accepted; and the architect was instructed to name December 15, 1882, in the contract as the date of their completion.

On motion, Miss Minnie E. Bird was appointed Assistant Librarian for the next collegiate year, at a salary of $125.

Ordered, That a sum not exceeding $200 be, and the same is hereby appropriated for advertising the University by President Scott.

A recess was then taken until 8 o'clock P.M.

Messrs. Lazenby and Chamberlain, members of the Board of Control of the Ohio Agricultural Experimental Station, submitted the following plan as a basis of co-operation between the Board of Control and the Board of Trustees of the Ohio State University, to wit:

To the Trustees of the Ohio State University:

GENTLEMEN: The Board of Control of the Ohio Agricultural Experimental Station ask permission to carry on the work of the Station at the Ohio State University upon the following conditions:

1st. To have free use of the field lying south of the University campus and west of the house now occupied by Prof. Derby, which is to be platted and wholly devoted to experiments.

2d. To conduct such experiments on the University farm, and in the fruit and vegetable gardens, as may be mutually agreed upon by the Board of Control and the Professors in charge of the same, all the experiments on the farm to be under the direction of the Professor of Agriculture, and those in the gardens under the direction of the Professor of Horculture—the work to be done and the expenses to be borne by the Station.

3d. To have free use of a team, implements, and tools belonging to the University—the Station to pay for all labor therewith.

4th. The Station to turn over to the University, for the use of the land, implements, etc., all products raised, except what it needs for seed, museum purposes and the like.

5th. To have rooms in the Agricultural Chemical Department of the new Chemical Laboratory for storing samples of seeds, soils, fertilizers, etc., for making weights, measures, experimenting in germination and similar work.

6th. The Station to pay a fair proportion—according to work done—of the salary of a competent agricultural chemist, who may be employed by the University to teach Agricultural Chemistry.

(Signed) WM. R. LAZENBY, *Director*.

On motion of Mr. Wing, the above proposition was accepted by the Board of Trustees.

The Board then adjourned until the 8 o'clock A.M. August 2.

The Board met at 8 o'clock A.M., August 2, at the University, and proceeded to examine sites for the location of the new residences about to be erected. The same was agreed upon and designated by stakes. After a general consideration of business matters, the following resolution was adopted:

Resolved, That all accounts, bills or estimates properly chargeable against the funds derived from the sale of the Virginia Military Lands, the expenditure of which is regulated by an act of the Legislature, passed April 17, 1882 (see vol. 79, p. 144 of Laws of Ohio), shall be approved by the Chairman of the Executive Committee before payment, and he is hereby authorized to sign all contracts for the erection of residences ordered by the Board.

The Board then adjourned, subject to the call of the President.

(Signed) JAS. B. JAMISON, *President.*

COLUMBUS, OHIO, *August* 30, 1882.

The Board met at 7 o'clock P.M.

Present—Messrs. Anderson, Wing, S. H Ellis, Jamison and Godfrey.

The minutes of the previous meeting were read and approved.

Samuel Kendrick, of Chillicothe, Ohio, appeared before the Board in relation to the discovery of Virginia Military Lands. After a full discussion, the matter was referred to Mr. Godfrey, with authority to prepare and submit such a resolution to the Board as would cover the ground informally agreed to by the Board and said Mr. Kendrick.

Wm. Halley's proposition for carrying the water on the different floors of the main dormitory to a tank on the upper floor, for the sum of $85, was accepted.

Board then took a recess until morning.

THURSDAY, *August* 31, 1882—9 O'CLOCK A. M

The Board repaired to the college grounds, and having located the site of the third residence about to be built for the professors, reassembled at 11 o'clock.

Mr. Godfrey submitted the following resolution, which was unanimously adopted:

Resolved, That Samuel Kendrick, of Chillicothe, be, and he is hereby authorized by this Board to discover, survey, plat, cause to be appraised, and sell undiscovered

lands in the Virginia Military District belonging to the Ohio State University, and known as Virginia Military Lands. The sales and the conduct of all litigations and negotiations concerning the same to be reported to the Executive Committee of this Board, and by said Committee approved, before the same shall be binding upon either party. After said approval, all expenses of surveying, appraising, or litigating, and other necessary expenses incurred, save and except the time given by the said Kendrick, to be paid out of such funds as may arise from each tract of said lands by sale or compromise, and the residue of each tract to be divided as follows: to the Ohio State University, 66⅔ per centum, and to said Kendrick, 33⅓ per centum. All moneys received by said Kendrick, excepting his expenses, as aforesaid, incurred, and his 33⅓ per centum, shall, in all cases, be promptly paid to the Treasurer of this Board as soon as received. Undiscovered lands shall be held to include all of said Virginia Military Lands reported by said Kendrick, and not known to this Board or any of its former or present agents.

The said Kendrick is hereby fully authorized to compromise and settle any case or cases, with the approval of said Executive Committee—this authority to terminate on the 10th day of November, 1883. The said Kendrick is to be entitled to the said 33⅓ per centum of all cases reported by him and approved by said Committee, and not finally settled at the date fixed for the termination of this authority. When said reported cases are finally severally settled, the proper agents and officers of this Board are to make titles, bonds, and conveyances, as provided by statute, for each tract of said lands, when requested by said Kendrick and approved by said Executive Committee.

The foregoing authority, and the terms thereof, are by me approved and accepted, this 31st day of August, 1882.

(Signed) SAM. KENDRICK.

President Scott and the Secretary were instructed to prepare several additional rooms in the Main Dormitory for the use of students, at a cost not exceeding $25 each.

On motion, Section two (2) of the By-laws was amended to read "second Tuesday" of November, instead of "third Thursday." The Secretary reported that, after consultation with the Vice-President, he had transferred all the policies of insurance held by the University in the Home Insurance Company of Columbus, Ohio, to the Queen Insurance Company of Liverpool, England, without any loss of premiums paid.

The act was fully approved by the Board.

(Signed) JAMES B. JAMISON,
President.

INAUGURAL ADDRESS

OF

WALTER QUINCY SCOTT,

President of the Ohio State University.

Delivered at the Ninth Annual Commencement, June 21st, 1882.

This first commencement under the present administration has been deemed a fitting occasion for a more formal and extended address than the brief response I made a year ago, when my honored predecessor placed in my hands the keys of this Institution.

A formal address upon that occasion would have been both out of place and out of time. And I must set aside my own pleasure now in

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NOTE.—The resignation of President Orton was tendered to the Board of Trustees June 20th, 1878, but was not accepted till June 21st, 1881, when the Board reluctantly yielded to President Orton's desire to be relieved of the executive office, in order to devote his entire time to the department of Geology. He was the first President of the University, and its rapid growth during the eight years of his administration was largely due to his wisdom, energy, and manifold powers as an educator.

In accepting his resignation the Board of Trustees unanimously adopted the following resolutions:

WHEREAS, Edward Orton, President of the Ohio State University, to enable him to devote more time to his special department—Geology—has seen fit to tender his resignation as President, after a continuous service of eight years; therefore,

Resolved, That in accepting it, which we do with unfeigned regret, we feel that words are powerless to express our high appreciation of his faithful, conscientious, and able services in behalf of the University.

Resolved, That in his special field, which his earnest endeavors, thorough scholarship, and practical talents will still further adorn, he should have and will receive our hearty well wishes and co-operation.

Resolved, That as a recognition of his eminent labors at the head of our institution, the honorary degree of LL.D. be, and the same is hereby conferred on him.

On the 21st of June, 1881, Professor Walter Quincy Scott, of Easton, Pennsylvania, was elected the successor of President Orton. Upon the following day, at the Commencement exercises of the University, President Orton delivered an address appropriate to the occasion of his retirement from executive duties, and by direction of the Trustees, placed the keys of the University in the hands of his successor. Professor Scott made a brief response, accepting the keys.

It was deemed fitting to postpone the formal inaugural address of President Scott till the following Commencement, June 21st, 1882.

yielding to the apparent propriety of a discourse which may be reasonably expected to set forth what has been accomplished in the foundation and work of this University, and to indicate the development of these results.

The transition from one administration to the next in civil government is often characterized by arbitrary changes of officers and methods either to satisfy the demands of patronage or the requirements of policy. But an institution of learning cannot properly be subjected to such a form of administration. Its trusts and its government are all of such a kind that the idea of administration is far less conspicuous than the organic elements and spirit exhibited in the instruction and culture of the young.

Changes in the corps of custodians, or of instructors, for all causes combined, are commonly so gradually and conservatively made, that the tree of knowledge is only pruned for better growth by the vicissitudes that must occur in individual lives.

In civil affairs, the officers and the machinery of government are so identified with the idea of administration that the principles for which alone the government is ordained are grossly or wholly misunderstood by multitudes of the people. To-day they think the defeat of a party is the ruin of the nation. To-morrow they see more clearly what the nation is.

But in an institution of learning, the officers of instruction and government are so subordinated to the purposes of education that even the humblest pupils soon learn to realize that the elements of knowledge, morality, and religion within themselves are vastly superior to the visible apparatus and authority by means of which their education is accomplished.

This supremacy of the organic ideas over the visible forms of the equipment and administration of the University requires that the law of natural growth shall determine the plan and the extent of whatever visible changes may be made. Changes in the Board of Trustees or in the Faculty or in the curricula always do more harm than good, except when the organic ideas remain undisturbed in their original foundations, with entire freedom to grow. This University cannot hope to develop the great and complicated ideas embodied in its organization without the substantial continuity of its Trustees and Faculty. And when we consider how little the idea of a State University had been developed in public sentiment when this Institution was founded a few years ago, it is really remarkable that it should present to-day

a solidity of organization not surpassed, if equaled, anywhere among the collegiate institutions in the State.

It is not only a good omen of what this great State will demand of such a University, but it enhances the honor that must forever be paid to the administration of President Orton—*nomen venerabile et clarum*. His hand was at the helm when this noble ship was launched, and for eight years his masterly grip and watchful eye guaranteed safety amid breakers on every side. Not till the open sea appeared did he ask release from the arduous labors of his post. No wonder that his colleagues wanted him still for their leader, nor that the trustees declined to accept his resignation, till at last he forced it upon them. Welcomed among his colleagues in the chair he filled with signal ability in addition to his executive duties, he made the Trustees, by remaining in the Faculty, more willing to entrust executive responsibilities to his successor. The harmony of spirit and unity of action which have so plainly marked the events of the past year, have therefore been mainly due to the wisdom and ability of my colleagues.

Let us, then, avail ourselves of this timely occasion, to look upon the growth of this Institution. Let us seek to know its organic ideas, and to be filled with their spirit.

In the first place, this Institution originated in a *national idea of education*. That is a very broad and very deep foundation.

Let history take care to record the grand fact that in the darkest hour of a terrible civil war springing from slavery, the National Congress performed a quiet and almost unobserved act, which showed as no other act could show, the spirit of free institutions and a calm faith in destiny. It endowed with a vast area of the national domain institutions for higher education in every State. No private fortunes nor corporate enterprise could have accomplished such a great result. It demanded the wealth and the authority of the whole people.

In the next place, this State, like the rest, adopted the national idea and accepted the sacred trust in behalf of all the citizens of the Commonwealth. The State of Ohio is forever indebted to the Nation for the original endowment of this University, and is forever pledged to maintain and support the liberal and practical education which is here offered to all the youth of the State.

Consider this coöperation of the Nation and the State in the foundation of this seat of learning.

The Nation's endowment was not a gift to be expended or used by the State at its own will or pleasure. It was an endowment placed in the hands of the State as a trustee. The object of the trust and the

terms thereof are explicitly declared. Who is the beneficiary? or who are the beneficiaries of this great trust? The State is the trustee for her own benefit. But the benefit of the State is not the entire nor ultimate object of this national endowment. The Nation itself claims the entire ultimate benefit of her bounty to the States. It is for the welfare of the whole people of the United States that millions of acres of the national domain were given The principle is plain. The United States are a nation. The States do not exist for themselves. They exist for the nation. No State is a law unto itself. Every State is subject to the Nation in everything essential to the national integrity. The Nation draws the territorial boundary of the State, guarantees its form of government, determines its relations with all the other States, enumerates its representatives in the National Congress.

The Nation is not an abstract idea. It is not what is left after subtracting one or more, or all the States. It is not composed of conterminous provinces, nor of contiguous peoples. The Nation is a living organism. It has a life, ideas, feeling, spirit of its own. Its constitution and its government are supreme over all the land and over the whole people. It has plans and purposes, duties and privileges, a mission to fulfill among the nations of the earth, and a sense of destiny.

The first duty of a Nation is self-preservation. But a Nation is worth only what its individual citizens are worth, in any and in all respects. And when self-government is the fundamental idea of a Nation, the national government must be so administered as to provide for the self-government of each citizen. Its prosperity and its perpetuity depend upon the intelligence and morality of the people, counted one by one.

For this reason there is nothing more liable to error than the opinion of an individual respecting the proper powers and functions of a Nation. It is quite common for a man to have a clearer perception of the proper functions of a foreign State than of his own. For he sees the general ideas of a remote government, while those of his native State are obscured by the multitude of local events around him. His judgment of fundamental laws is less disturbed when applied to a system of government separated from those affairs of his own daily experience, which operate through his own pleasures and pains to produce prejudice rather than wisdom. The National idea is constituted of moral elements, of which we know nothing until experience has produced the moral organization of the community. It is for this reason that a State at its origin is known vaguely but felt deeply as a moral movement of the community. Where the State rises from a few individuals by the slow

growth of the population, the moral organism of the State is slowly discovered and feebly felt. Where the State originates by the sudden separation of a mass of population from a State already highly organized, the powers and forces of the new State are vividly realized in moral ideas that break forth in speech, and song, and battle, while yet the visible forms of government, the machineries of the organized community, its industrial appliances, its military equipment, its social regulations, are all to be invented, and framed, and operated in consequence of the moral ideas which make up the constitution of the community, the genius of which is first, last, and always the spirit of the people. Therefore, in the earlier history of a State, it feels its powers of growth rather than its structural forms and functions. So the founder of a State is not only understood by foreign nations, but is first and highest in the hearts of his countrymen. His greatness is of the moral order, and therefore belongs to mankind.

But the moral ideas which constitute the foundation of a State must grow in power and usefulness, by means of the visible organizations that take shape out of the industrial, political, and social activities of the people. These machineries of human action multiply with the increase of the population. They are structural forms of social conduct, which show themselves more and more plainly to the citizen, because the processes of these organizations press in upon his private life with a tendency to control and regulate every act.

With the growth of the population there goes on a constant increase in the complexity of parties, sects, corporations, societies, each claiming the time, the resources, and the loyalty of the citizen, till he is compelled to choose from among them all what he attempts to construct into the proper machinery of his own life. Out of such choice grows the disposition of the individual to identify the form of an organization with his moral ideas of what the whole community should be and do. For this reason each generation tends to become more involved in its own organizations, which absorb so much thought and energy that the moral ideas upon which the State was founded tend to become obscure in the understanding and feeble in the affections. The actual leader of a party, the head of a priesthood, the magnate of a corporation, comes to occupy the public mind to-day, while the fathers and founders of the republic sleep in the public heart, an almost nameless grave.

But moral ideas never die. They grow with the power of the endless life. Men perish, and the visible organizations of society are all transformed into funeral processions at last, and yield up their full meaning to the next generation in the inscriptions upon tombstones.

A military hero is composed of two elements—absolute force and a moral idea. He is the embodiment of the spirit of the State which finds itself, amid the wreck of all organizations, reconstructing out of persons and properties the Commonwealth of the people according to the moral ideas which gave birth to their constitution, and which were the real causes of the growth of the State concealed within the structures of society, and gradually encroached upon by the selfish competitions of organized parties. For there is a natural antagonism between the law of growth and the law of structure in the community as in the individual The powers of growth in the individual originate by inheritance, and determine the size and form of the body. The law of growth requires freedom of action, and precedes the development of the principles of structure which in turn become dominant when the limits of visible growth are reached and the members of the body strive together within for the mastery. The pains and diseases of later life are social disorders—strikes of laborers, insurrections—and death is the civil war of oneself, out of which the spirit appears as the triumphant hero of man's nature.

The moral ideas upon which a Nation is founded are wrought into the reproductive stock-power of the people. Children get them first mixed with their mothers' milk. Lands and waters, farms and factories, roads and ships, cities and forts, armies and navies,—all these are not the strength, but the overhanging mass of calamity and destruction to a nation when its stock and moral disposition are weak The philosophic historian does not take the census of these things. He finds the whole vital and lasting strength of the Nation at any time lying in the cradle—in the babies of the people, unable to do anything but grow. Where the Nation reproduces itself, it must preserve itself—an it is the business of the Nation to see that children shall grow up in such courses of training as the fundamental ideas of the Commonwealth require. For this reason there is ever the supreme need among a free people that the youth shall be taught to understand the ideas and to imitate the examples of the fathers and benefactors of the republic. The Nation truly grows only in so far as each generation becomes morally better and stronger than its parent. The patriotic pride of a generation must manifest itself not in boasting of the great deeds and lofty character of former generations or of the founders of the Nation, but in making use of its inheritance to do still better and greater deeds. For descendants never boast of their ancestors until they have become unlike and unworthy of them. Between the ascending growth

and progress of a Nation and its decline, there is always a period of arrested and idle powers characterized by national vanity.

For a Nation at best is only one among other nations. A Nation, therefore, grows best so long as it is pressed round about by other nations more civilized than itself. For it not only can look up to higher examples, but must develop power to protect itself against strength greater than its own.

A Nation is always in danger of decline when surrounding nations are weaker than itself. A man utterly alone in moral greatness, surrounded only by weaklings, may yet, like Moses, find a higher example of character in his conception of the Deity, and exalt his greatness toward his ideal, but the nations are as yet so ignorant of God that each is influenced only by the example of a greater Nation; and when this is wanting, it glorifies itself till its energies are wasted in insolence and oppression toward neighbors, and in vain self-indulgence. And when the eagle is a fool the sparrows can avenge themselves.

Now, what I have said respecting a Nation or State in general, applies with peculiar emphasis to the American people; for the Nation is composed of States, each of which is so like the Nation, that after nearly a century the moral ideas of the constitution broke forth into a terrible civil war to decide the question whether the national government was superior or subordinate to the sovereignty of the individual States.

The national idea destroyed the local governments, and the Nation, as the supreme organism, suddenly rose high among the most mighty nations of the globe, because this vast people had sealed in blood the sovereignty of the National Constitution.

In the history of nations, wars are joined together with great educational movements. The fundamental ideas which survive the destruction of bad institutions spring forth in the moral energy of the Nation. It stirs the heart and the brain of the people. Its mighty power spreads into every form of enterprise, and the material and civil progress of the Nation is shaped and organized according to the national spirit.

The people of this generation are too near the triumph of the Nation over the States, and too much absorbed in the amazing progress of all industries under its sovereign power, to appreciate the perils to free institutions which lie stored up in the national idea itself. We have learned how the people of the State identified its organized

forms with their moral ideas of what the whole country should be, and so encroached upon the very life of the Nation. We are yet to learn how far the whole people of the Nation will come to identify the material results and administrative forms of the national power with the moral ideas and spirit of self-government. For there is a powerful tendency of the visible structures of the administration of a national government, and of the corporate organizations invested by its authority with control of the traffic and the travel of the people, to encroach upon local legislation and upon the rights and liberties of classes of citizens.

Occupying a vast continent between two great oceans, this Nation has no cause to fear a foreign foe. But there is no hope of perpetuating the free self-government of the enormous population crowding in upon this vast territory, except in the intelligence and morality of the people. The whole mass of citizens must be lifted to a much higher level of knowledge and civic virtue than the common people of any Nation has ever yet reached, or the republic is certain to be destroyed. No amount of knowledge and virtue in the governing minority can preserve free institutions if the voters of the Nation are not lifted above the level of knowledge and experience obtained by mere physical labor. We have wiped out the compromise line between the civilization of free labor and the civilization of slavery; we have dissolved the partition lines of the sovereignties of States; but we have laid down lines of continental transportation, and lines of continental telegraphic communication, to which we are adding lines of shipping, and of cables extending across the seas—all in the hands of private corporations. To these we are adding boundaries around the agricultural and the mineral products of the natural divisions of our soil, and around the areas of service occupied by public buildings and fortifications. All these things, while suppressing territorial sectionalism of the North and the South, and of the East and the West, tend to develop the selfish interests of classes of the people, and are fraught with the perils of antagonism between the upper and the under classes. And it is possible for the conflict between virtuous intelligence and vicious ignorance to become irrepressible.

Because the Nation apprehended peril to itself from its people, from their growing up in ignorance of its moral organism and true nature, the Nation paused in the very midst of civil war, and laid the solemn emphasis of its own struggle for existence upon an act to provide for the higher education of the whole people. By that organic act the Nation entered upon an inviolable contract with the several States for "the support and maintenance of at least one college where the

leading objects shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such a manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

These terms are broad and plain. The Nation had no disposition nor right to use the wealth of the whole people to benefit any class of citizens to the exclusion of other classes. It had no disposition nor right to dictate the manner of teaching, but referred it entirely to the States themselves.

It is neither logical nor wise to press general terms too closely in their applications, but there is no mistaking here the purpose of the Nation to lay hold upon the work of higher education in order to accomplish what had not been done and could not be done by sectarian and private endowments of collegiate education. The liberal and practical education of the industrial classes certainly required that branches of learning relating to agriculture and mechanical arts should be leading objects. Religious denominations never did make and never ought to make such studies the leading objects of their endowments. The preparation they have afforded for the learned professions of theology, law, and medicine, has been ample and thorough. But the developments of modern science outside of these professions have been so vast that industrial education demands parallel and coördinate courses of study for which provision must be made in institutions crowning the systems of public education. But the Nation has no disposition nor right to exclude any branches of knowledge from her seats of learning, and has a duty and a right to require a course of military training.

We may rest assured of the broad fact that in a free country the wealthier classes will not inquire of the State where to send their sons and daughters, and that therefore the National endowment was intended to provide the costly apparatus of higher education in such a way that every class of youth should possess equal opportunities and equal advantages in education. It is, therefore, a supreme obligation of this University, as of all others likewise founded, to administer its endowments so as to keep the higher education within the reach of every earnest student.

We have now considered the National idea of education upon which this institution is based. It is in the second place founded upon the *State idea of education*

The organic law of the National endowment was properly general-

ized so as to be interpreted by each State in harmony with the necessary differences that must obtain in the several systems of public education in the States. The citizens of the several States differ widely in the distribution of their pursuits and professions. Each State is for itself the best judge respecting its own system of public instruction. The Nation left to each State the interpretation of its own needs. Each State was authorized to divide the endowment among several colleges, or to concentrate it in one institution. The result has shown the wisdom of this provision in the law. It was natural that in some of the older States the endowment should be invested in departments of agriculture and mechanic arts, added to institutions already highly organized in other branches of education. The combination of the national endowment with endowments by private citizens, as in the case of Cornell University, illustrated at once the good faith and the wisdom of the State of New York. The noble motto of Cornell, "I would found an institution where any person can find instruction in any study," is a complete response to the requirements of the Nation and the State.

In equally good faith, and with great wisdom, the State of Michigan, having already placed at the head of her system of public instruction a University justly renowned throughout the world, provided an agricultural college upon a separate foundation—an institution worthy of its growing fame.

Let us confide in the good faith and wisdom of Ohio—our own most noble State. A garden land between the great lake and the great river with mountain gates on the East, Ohio is the natural and perpetual highway between the East and the West for all travel and traffic.

Other States are larger in territory, and quite a number will yet acquire a vaster population. But no State is better adapted at present to agriculture, while only a few can maintain superiority in manufactures. We are the third generation since the State was organized, and 3,000,000 of people, nearly 100 to the square mile, are admonished by a failing soil of the imperative need of agricultural education. At the present rate of growth the sixth generation will behold 200 inhabitants to the square mile, and the manufacturing industries exceeding the agricultural pursuits which to-day engage less than half of the population in all classes of occupations. A natural centre of such vast trade and transportation, the highway of products and persons for the whole country. Ohio will continue to be a meeting ground of many varieties of population. The State is already a highway and battle-ground of ideas, and her citizens are distinguished for political and moral activity.

But while her ample provision for primary education has kept pace

with the growth of her population, the State of Ohio must face the fact that her work in higher education imperatively requires to be greatly advanced, or in the competition of States Ohio will inevitably fail to reach and maintain the high rank in all the powers of a State, which it is her privilege and her duty to occupy.

I venture to assert, that there is no problem more worthy of the attention of Ohio to-day then the perfection of her system of public instruction by terminating the instruction of the primary and secondary schools in a complete equipment of higher education.

Let us confidently believe that this great State of Ohio has wisely laid the foundations of liberal and practical education for all her youth.

What is meant by practical education? Consider the apparatus which is here provided.

Here are laboratories of physics and chemistry, and of mechanical and civil engineering. The chief thing to be observed in practical education afforded by laboratories is the discipline of manipulation.

In physics, bodies must be handled every way to learn their quantities and qualities, weight, size, form, density, states of rest and motion and a multitude of relations, many of which are too obscure to be named.

In chemistry, manipulation must go over the same bodies in different ways. It is nothing to know the names of things in common talk. The student must analyze the solid, the liquid, and the gas, keep handling their minute parts, invisible atoms, watch their combinations and separations along lines of forces. He is a maker of big words, when he tries to tell the numbers and motions of things. Great laws run together through things into his consciousness. He has no name for them yet, but he is our silent expert to handle things.

In mechanics, manipulation is engineering. The masses and motions of bodies are kept in hand and under the eye. Tools and machines must take shape and form and structure according to the same laws that guide manipulation in physics and chemistry, but the processes and results are different. Solids, liquids, gases, are only the outside states of matter. There is a fourth and more states inside It is little to know the outside names. Manipulation makes practical skill, the kind of knowledge that gets out of things the largest and best supplies of living. Physics, chemistry, and mechanics are all at one in the manipulations that extend into the great industries that build roads, bridges, railways, telegraphs, ships, cities, that supply food and raiment from soils, plants, and animals.

But industrial work is not practical education. That stays with manipulation, the working hand showing things to the consciousness

through the watchful eye, the tender touch, and countless feelings of the sensorium. The training of the mind, its wisdom and skill, are made up of thousands of observations and judgments that are learned in silence from the manipulation of second causes that work along lines of force, and are taken up into the final and voluntary states of consciousness. Most of these are nameless and wordless. The best part of education dies unuttered. It does not belong here.

There is no use in trying to get an education in physical sciences without manipulation. One cannot read it out of books. Words are only physical noises or mere marks without meaning; that must be worked up into consciousness like any other bodies by manipulation. Here are languages ancient and modern, dead and living, in books and in voices. It is only material stuff to be worked up in the laboratory of human bodies through the physical organs of speech. A child at its letters is doing the same that a senior is doing with the words of Plato or of Newton. Grammar breaks up language so as to get it into the mind again word by word through eye and ear, and out by tongue and look and gesture and pen. The mind catches one element of meaning in a word at a time, and must needs work it over many times and ways to get up into the consciousness of developed minds. A living language slips into one ear and out at the other, and a little of it out by tongue. The chatterboxes think a few hundred housewords of a modern language will show them what was in the mind of Gœthe and Pascal. Learning to talk in a few months is a baby's smartness. It is a man's part to rethink the thoughts of a great mind which are always between words. The facts of science recorded in German and in French are to be learned by any student only by the patient and severe manipulation of words and words. It would be a good thing for some students if the German and French languages were entirely dead to them instead of nearly so.

There is no better manipulatory discipline for many minds than dead languages that include great histories and literatures, like the Greek and Latin. A classic language is always an ideal speech that works to and fro through all the experiences of the human mind. The people never hear it—only tones that suggest it. It is of no consequence to talk Greek or Latin. Modern classics, including English, are as dead to most people.

There is no way of learning the vast and precious knowledge of the ancient world, except by manipulating the meaningless signs of Greek and Latin till the words become living voices once more in the consciousness. Language is the only product of the mind. A literature embodies all the minds of a civilization. When it is dead the student

works through every element of thought, and every process of thinking, and every fact of human experience, till his whole mind is set growing in all its faculties, till his knowledge of human life is broad and deep, and wisdom is at one with culture. Histories make men wise—not feelings, nor prophecies. We look back to the ancients not to take sides in their affairs, but to understand them. We get away from our passions and prejudices. And the ancients are ourselves that lived yesterday.

It is the chief merit of the Bible, as the educational book of Christendom, that is written in dead languages, the language of most spiritual sensibility joined with the language of most exact expression.

The din of debate about ancient and modern languages is not to be settled by the folly of excluding either from collegiate training, but by providing parallel courses, in which the ancient and the modern languages shall be respectively combined with the mathematical and natural sciences, and the arts. There are many students who will not be trained, and ought not to be trained, in Latin and Greek. For them there abundant mental discipline in manipulating German and French and English.

Now the educational effects of these constant and varied manipulations going on in laboratories of physics, chemistry, mechanics, and languages, are clearly witnessed in the inventive and discovering qualities of the mind.

The secret and silent forces of nature are thus so constantly working things into the feelings and motions of the organs of the mind, that uniformities and differences of natural objects repeat themselves in the consciousness, till the things that have been yield up the conditions and motions of the things that are, and a hint of the things that are to be. The manipulator's mind gets so close to the method in which the correlated forces of nature operate, as to hear the whisperings of their secret movements, and so discover the great principles that become embodied in new forms, and machineries, and appliances. The inventions in natural sciences, like the grand products of oratory and poetry, of the historical literatures of law, philosophy and art, are all discovered by the quick and penetrating qualities of the mind, developed by manipulation.

But the education here provided by the State includes more than laboratories and languages. Here are museums and cabinets, and a variety of apparatus pertaining to Botany, Zoölogy, Geology, and the like sciences, which are distinguished not so much by manipulation as by the constructive principles of *classification*. Here are mineral fragments, soils, rocks, ores, mingled with dead parts of plants and ani-

mals, all ticketed with names of other things which they signify. It is nothing to know the names.

Stratigraphical geology is mathematics, astronomy, physics, chemistry and mechanics in concrete form. Economic geology is joined with scientific manipulation, and all practical industries of agriculture, and the mechanic arts.

Botany and Zoölogy are sciences of concrete forms of organized living bodies, embracing all the laws that govern the masses and motions of material bodies, together with the laws of life.

The educational effects of studying these sciences are peculiarly exhibited by the processes of classification.

Classification is a contrivance of the mind for the orderly grouping of our ideas of objects, in such a way as to aid the memory in retaining knowledge already gained, and to assist the mind in making further discoveries of the uses and laws of things. Our ideas of objects are made up of resemblances and differences, and the classification of notions only approaches the groups of real things. The points of resemblance, or of difference, place, habitat, time, size, form, use, and the like, are all selected as principles of classification, according to the purpose present in the mind aiming at some practical use of things. So plants are annuals, biennials, herbs, trees, deciduous; and animals are vertebrates, invertebrates, quadrupeds, fish, fowls.

But it is nothing to know names in common talk. The mind is right away empty of mere names, and artificial terms of classification. A good classification is one that enables the mind to make the most assertions of facts. His name is Smith, but your knowledge of him does not enable you to say anything about the other Smiths.

The student must find and name a characteristic that is always found together with the most other properties in order to make a scientific classification. Thus the wayfaring fool sees that animals are one group, and plants another. But the mind is trained to observe and discover that animals are characterized by sensation, by voluntary motion, by a stomach; while plants are wanting in these traits, and so far hold a negative relation to animals; that animals produce fat, while plants produce starch, and therein the two groups are marked by different products; that animals consume carbonaceous food, while plants produce carbonaceous tissues; that animals produce carbonic acid which in turn the plants absorb; that plants evolve oxygen, which in turn the animals absorb; showing thus three relations of mutual exchange and common dependence upon vital laws. So classification widens the groups of facts and ideas, until we now see no sharp line between the

organism of a plant and that of an animal. Meanwhile the mind has been going through all the relations of natural groups, rethinking the thoughts embodied in the laws of creation.

Physical and mechanical manipulation may be so confined to parts of dead matter in the laboratory as to make the mind acute and skillful in shop science, but too narrow for the rolling globe outside, covered all over with societies of living creatures and sweeping through the vast and solemn spaces of the universe.

The student of the sciences requiring classification must think from centre to surface of the rolling globe, through all its mingled masses, over all its conterminous areas of lands and waters, through all the dissolving margins of inorganic and organic bodies, and of the transformations and transmutations of living creatures.

The educational effect of the classificatory sciences is to make the mind subtle, wise, and comprehensive.

There is always the danger in manipulating and classifying second causes of becoming so absorbed with the knowledge of the nature outside of man, as to ignore or deny the higher truths within human nature itself. Lord Bacon never wrote anything more philosophic than the solemn caution :

"A little philosophy inclineth man's mind to atheism, but depth in philosophy bringeth men's minds about to religion; for while the mind of man looketh upon second causes scattered, it may sometimes rest in them and go no farther; but when it beholdeth the chain of them confederate and linked together it must needs fly to Providence and Deity."

Consider now the problem of education in Agriculture. There are three kinds of living creatures on the earth—plants, animals and human beings. The problem is how human beings can obtain from the earth the greatest quantity of the lower kinds of living creatures in such conditions that by killing nearly all of those produced the lives of human beings shall be increased in number, in duration and in happiness. The central idea of the whole problem is in one word, *life*. The central difficulty is in the struggle for existence. The first thing to do is to realize our total ignorance of what life is in its essence, and our vast and dark ignorance of the conditions of the generation and reproduction of living bodies.

We are told there was a time when no living creatures inhabited this planet, and that the time is coming when it will again contain no living creature. This implies that there is an intervening time when the life energies of the earth shall have produced the maximum

of living creatures. If this be so, let us hope that we live in the progressive period of human history.

Certain it is, that while the human population of the earth is larger than it ever was before, many races here and there have perished with all they builded. But the most of human toil has always been expended in getting plants and animals for livelihood. Men have lived by the sweat of their brows, except a few who have made other brows sweat out their shares. Where there has been plenty of land, agriculture has been chiefly manual labor, while education has been confined to languages, philosophies, arts, the things necessary to build cities, to control manufactures, to govern society. Where the population has crowded upon the means of subsistence, there has been a decline of manufactures and the arts, compelling the educated classes to give attention to the absolute importance of agriculture.

It is a grave mistake to suppose that the ancients knew nothing of scientific agriculture. The Egyptians had experimental farms, very much like ours. Cato wrote an exhaustive book on agriculture. The Georgics of Virgil are full of our own common talk on nearly every topic. Varro, the learned scholar of the Augustan age, wrote three books—a complete cyclopædia of agriculture.

Columella and Palladius, each with thirteen books, surpass all their predecessors in scientific completeness, and appear to touch every branch of agriculture. Their catalogues of implements, of plants and animals, their descriptions of experiments and fertilizers, of tillage and breeding, are largely the same talk that we hear to-day on every side.

Columella describes underdraining equal in all respects, except convenience and economy, with the tile-draining of to-day.

The preservation of green forage in silos, which many to-day oppose as a doubtful innovation, was a common process in Greece, Italy, Africa and Spain. Columella, Varro, Pliny, Curtius, and other writers clearly describe ensilage

Vegetius wrote a large work on Veterinary science, and Wilkinson shows that the Egyptians developed this science to a high degree of perfection. Pliny and Palladius describe in detail the header reaping machine, used on the vast estates of the Gauls. Diodorus and Tacitus tell us how the Britons and the Germanic nations employed silos for the storage of green crops. English husbandry boasts of turnip culture, but Pliny tells of the equal success of the Romans in this most important part of farming.

Professor McBryde has collated many such facts as these, and

appends a quotation from Columella, which is substantially echoed to-day by the friends of agricultural education:

"I can not sufficiently wonder, says Columella, how it is that those who are eager to become speakers, select an orator whose eloquence they can imitate; those devoting themselves to the subjects of mensuration and mathematics, engage a master of the study of their choice; those desirous of becoming skilled in dancing and music very carefully seek for one who can train the voice and instruct them in singing, as well as for one who can direct the motions of the body; even those who wish to build, call to their aid mechanics and architects; those committing their vessels to the deep, skilled pilots; those engaging in war, men versed in arms and acquainted with military affairs; and, not to mention each *seriatim*, for the calling which any one wishes to pursue, he employs the one best qualified to teach it; in fine, each one summons to his aid from the assembly of the wise a director for his mind and an instructor in excellence, while husbandry alone, which, beyond all doubt is nearest to, and as it were the blood relative of wisdom, stands as much in need of scholars as of masters. For, until now, I have not only heard that there are, but I myself have seen academies for rhetoricians, and, as I have said, for geometricians and mathematicians, but what is more remarkable still, technical schools for the most contemptible vices, for dressing food more daintily, for concocting more appetizing dishes, and for hairdressing, but I have never known any professing to be either teachers or students of agriculture."

But let us hope that modern agriculture has substantial advantages as compared with ancient husbandry.

Here are schools and experiment stations with appliances of which Columella scarcely dreamed. A course of studies in agriculture is made parallel with all others that reach up to the highest degrees of learning. All the laboratories of the natural sciences are involved in the art of agriculture. Mathematics, physics, mechanics, chemistry, botany, zoölogy, geology, all the sciences of manipulation and of classification are necessary to scientific agriculture. The experiment station means the application of all these sciences to this comprehensive industrial art, while the very term experiment betrays our ignorance of the main question.

But chemistry has advanced so rapidly within recent years, that it not only has exalted its value as second to none of the manipulatory sciences, but bids fair to establish a claim to be recognized as a classificatory science. If anything will do it, chemistry will discover the processes of natural transmutations, the sources of supply to plant life and animal life.

The thing needed is coöperation of all the experiment stations with each other, and with the department of agriculture in the National Government. Isolated efforts involve a vast waste of time, energy,

materials. There is nothing more in need of the encouragement and aid of the government, nor anything that will return a richer reward to the State. With a full equipment of agricultural chemistry, botany, horticulture and entomology, added to complete equipments of the existing laboratories, and with the coöperation of the experiment station, the meteorological bureau, and the various agricultural organizations in the State, this University can accomplish a work of vast benefit to all the people at far less cost than the amount wasted on every hand, each year, for lack of knowledge only.

Let it be clearly understood that agricultural education is not to be confined to the special training of young students, but must be largely occupied with the instruction of public opinion regarding the absolute importance of scientific agriculture, and with the organization of public opinion into co-operation with the practical industries that must take shape out of scientific methods.

It must be borne in mind that the baccalaureate degree in the agricultural course cannot be lowered in comparison with technical and professional degrees. The path of science is as steep and rugged on that side as upon any other.

Many young men that return to the farm after going through a part of the course, are indeed better fitted for success, but their parents and themselves alike are seriously mistaken in not resolving that the entire course is indispensable. True, it is, that many students after four or six years of study in a community of scholars, will not return to manual labor on the farm; but the very thing that is needed is to train up a class of scientific farmers who will not have to spend their lives in drudging toil, but who shall, like other scientifically trained men in mercantile and in professional life, be able to employ all the brawn their brains shall require.

I have considered agricultural education at this point in my discourse, not so much because the course in agriculture has been among the last to acquire an equal and parallel standing with the courses of higher education, but because its very nature and great importance involves the comprehensive application of all the manipulatory and classificatory sciences relating to inorganic and organic bodies.

We have now considered the apparatus of education in those broad aspects that are commonly called practical as contrasted with those called liberal. They relate to things outside of man's own nature as contributing supplies to human life. But indeed all knowledges of things, outside of manhood itself, do not constitute education at all.

Education is of man's own nature or it is nothing. The knowledges acquired by the human mind of things in the external world—plants, animals, machineries of industry, and the like, must in their nature vary with every climate and race and age. But man himself is the proper study of mankind, and always the same study. Libraries that record human experience, and living voices that speak it, the co-working of minds with minds in class-rooms, in societies, the conversations of private life, the literary discussions and public debates, all these are the apparatus of liberal and manly culture which must always be the chief part of education. If it be practical to control machines and brute creatures, it is no less practical to acquire scientific control of the body, the mind, and the heart of human beings. The physician who deals with the body of man, the lawyer who is concerned with his mental life—his reputation, property, personal rights, and civil conduct, the minister of religion, who is concerned with his moral affections and spiritual sensibilities, with the training of children, with private griefs and with social purity; these professional characters are the product of human nature itself; and their importance and practical value can never be replaced or diminished by anything outside of man himself. But what shall I say more of the economic and social sciences developed out of the conditions and characters of human beings? of antiquities? of history? of political economy? of constitutional law? of the fine arts? of literature? of mental and moral philosophy? of religion? No schemes of training in natural sciences are practical unless they are joined with these parts of the liberal culture of man's own nature. Nor is any scheme of education in the humanities truly liberal that does not closely join with the practical disciplines of the manipulatory and classificatory sciences.

The scientific controversies of the age of Newton centered in ideas of space—ideas terminating in nature outside of man. A vast and permanent change was wrought in the human mind when it beheld the immeasurable spaces of the universe as if indeed it were a new creation. The littleness of man's place in nature compelled a reconstruction of theories as to his relations with the natural objects filling the spaces of creation, while the Newtonian astronomy disclosed and exalted the greatness of the power of man's mind over the space-filling objects around him.

The effect of this upon the imagination is seen by comparing the childish superstitions of the Miltonian cosmogony, with the heavens described by the genius of Byron in Cain. Its effect upon the practical

reason is exhibited in the stimulation of research into all the parts of the heavens, and into the cosmical forces generating the forms and properties of material bodies. Then Herschel suggested and Laplace developed the nebular hypothesis respecting the origin and formative processes of the solar systems, while the Novum Organum of Bacon laid hold of man's world with the exploring and experimental zeal of inductive inquiry. The whole group of natural sciences, mathematics, astronomy, physics, chemistry, geology, botany, zoloögy, and the like, were joined together in the vast accumulations of human knowledge that necessarily wrought great changes in the forms of industry, of commerce, of social, civil, and ecclesiastical polities.

The scientific controversies of the age of Darwin are centered in ideas of time—ideas that terminate in man's nature. For the common element and inexpugnable test of all these mingled motions of space objects is time. For all objects occupy parts of space, but the rolling globes have their being, and move in the same instant of time. All spaces and times meet in the human soul. Let the sciences of nature behold spaces so vast that man's origin must be pushed back to a place as little as it is remote, and the original places of things be pushed a yet vaster distance further back. Still, things must move together, till man appears, with a mind developing into knowledge of all spaces and times, and uniting all into the consciousness of the Eternal Being and the endless life. The tendency of sciences in this age is toward personal ideas. Discussions turn on conceptions of supreme persons in science, in politics, and in theology. For great organizers are coming to be needed more and more. The rapid communication of innumerable minds, and almost equally rapid exchange of powers and products among the dense populations of the globe, are demanding and developing the highest orders of executive genius and philosophic wisdom ever displayed in the history of man. Surely the State is called upon everywhere to provide for the education of the masses, but all the stars of heaven and all the souls of men call for all degrees of liberal education, reaching to the highest. But any scheme of education that ignores the moral conduct and the religious nature of undergraduate youth, must be pronounced fundamentally defective by the consenting testimonies of natural sciences, as well as by the voice of every enlightened conscience. Let us hope, that while the State of Ohio will here maintain a University which shall be non-sectarian in the fullest and best sense of the term, the morality and religion of the Christian civili-

zation shall be recognized and cherished as the most precious elements in the education of the young. And, in behalf of this encouraging and inspiring hope, I invoke upon this University the blessing of Almighty God.

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